The Sight-Saving Review

Volume XXIV Number 4

Winter, 1954

Table of Contents

WINIFRED HATHAWAY, 1871–1954 194

OCULAR DEFECTS IN PRESCHOOL CHILDREN
Walter H. Fink, M.D. 196

THE INTERPROFESSIONAL COMMITTEE FROM THE VIEWPOINT OF AN OPHTHALMOLOGIST
Alson E. Braley, M.D. 201

ELECTROENCEPHALOGRAPHIC CHANGES IN CHILDREN WITH STRABISMUS
Manuel L. Stillerman, M.D. 204

HIGHLIGHTS OF THE 17TH INTERNATIONAL CONGRESS OF OPHTHALMOLOGY .. 206

REPORT ON RETROLENTAL FIBROPLASIA AT AAOO 212

INTERNATIONAL POB CONGRESS 215

A STUDY OF NEW YORK'S VISUALLY HANDICAPPED CHILDREN
Helen M. Wallace, M.D., Walter S. Schachat, M.D., Myra Palmer, M.D., Leah Hoenig, R.N., Samuel Lossef, M.D., and Herbert Rich .. 217

PROGRESS IN EDUCATION OF THE PARTIALLY SEEING IN OAKLAND
Al Tudyman, Ed.D. 226

AROUND THE WORLD 232

CURRENT ARTICLES 236

BOOKS AND PAMPHLETS 250

INDEX TO VOLUME XXIV 254

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WINIFRED HATHAWAY

1871–1954

IT has been said of Winifred Hathaway that she brought the story of the need and the methods of safeguarding sight to a larger number of persons than any other man or woman in the United States. Her death in New York on December 1 at the age of 83 leaves profound sorrow in the hearts of all who knew her, particularly the directors and staff of the National Society for the Prevention of Blindness of which she was associate director for 24 years.

Although she retired officially in 1949 Mrs. Hathaway kept close contact with the Society's work, and continued to inspire her associates with her devotion to the cause of blindness prevention. She completed the latest revision of her well-known text "Education and Health of the Partially Seeing Child" shortly before her last illness. This book, published on December 3 by Columbia University Press, stands as a monument to her life of service.

Mrs. Hathaway was born November 23, 1871, in Pembrokeshire, Wales, daughter of Daniel and Mary Morgan Phillips. She came to this country as a child and, in 1904, married George A. Hathaway. The Hathaways had a son, John Emerson, who was born in 1906 and died shortly after birth. There were no other children.

Mrs. Hathaway is survived by her husband and a sister, Miss Ellen Phillips.

After receiving her A.B. from Radcliffe College and her M.A. from New

York University and Columbia University, Mrs. Hathaway became instructor in English and Literature at Hunter College and later head of its History Department.

Joining the staff of the National Society in 1916, she initiated its campaign of professional education, working particularly with educators in urging special educational facilities for partially seeing children. In 1916 fewer than a dozen centers afforded such special facilities; today there are more than 650. Mrs. Hathaway was largely responsible for the development of courses for the preparation of teachers and supervisors of the partially seeing, and conducted and participated in elementary and advanced courses at Columbia University, George Peabody College for Teachers, New York University, Wayne University, Western Reserve University and the universities of Southern California, Chicago, Cincinnati, Hawaii, Minnesota and Texas, as well as at various state teachers colleges.

Mrs. Hathaway was the author of "Easy on the Eyes," and of innumerable articles on education of partially seeing children, school illumination, and the general subject of school environment for safeguarding eyesight. She was a member of the board of directors of the International Council for Exceptional Children and the Illuminating Engineering Society's committee which revised "American Standard Practice for School Lighting."

In 1926 she visited the London classes for partially seeing children to observe the work being carried on there, and returned to England in 1932 to observe the Maddox Clinic in London and to confer with the medical branch of the Board of Education. At that time she visited facilities for educating partially seeing children in Dortmund and Berlin, Germany; Vienna, Austria; and Zurich and Basel, Switzerland.

In 1932 she surveyed the work in this field in the Territory of Hawaii, which she revisited in 1938 when she conducted a course for the preparation of teachers. In 1947 she surveyed the work in Canada. In interim years she traveled all over the United States actively promoting the work and assisting educators. She constantly fought against undue segregation of partially seeing children, regardless of the educational pattern in use, since she recognized early that such segregation produces long-lasting psychological and social effects. Today there is general agreement with her philosophy not only with respect to the partially seeing but in the general field of special education.

Among other honors Mrs. Hathaway in 1937 was awarded the Leslie Dana Gold Medal for outstanding work in blindness prevention, and in 1950 the Ambrose M. Shotwell Award, as a "great teacher and one who works constantly and courageously to make our load light." She was made an honorary life member of the National Society in 1951.

In presenting her with the Leslie Dana Gold Medal, Dr. Park Lewis said: "Because of the things that she has done, because of her selflessness, of her thoughtfulness, her self-abnegation, the altruism that has characterized her every daily act, we have summoned this woman, Winifred Hathaway, that we may do her honor in the presence of her collaborators, the ophthalmologists of America."

OCULAR DEFECTS IN PRESCHOOL CHILDREN

WALTER H. FINK, M.D.

Minneapolis, Minnesota

Too little attention has been paid, says the author, to the condition of the eyes at birth and in the early years of life. The pediatrician and the family doctor as well as the parent play an important role in the recognition of defects during this period when vision develops most rapidly.*

THE importance of ocular defects in preschool children is not generally recognized, if one is to judge by the number of preventable tragedies that occur. This fact is repeatedly brought home to the oculist who in his daily practice sees children's eyes that are working under a severe handicap and are performing tasks far in excess of their strength. As a result young eyes are irreparably damaged.

Much attention and discussion are centered around the school child, but very little is said or done about the preschool child. It is of far greater importance to focus our attention on the preschool child, because it is at this time in life that the eyes go through their greatest period of development and are most vulnerable. This is the period when vision develops most rapidly and when all interference to development must be eliminated. The eye at this stage is in a plastic state and improper management will cause permanent defects to develop. It is generally recognized that the earlier in life the ocular defect is discovered the better, because the sooner corrective measures are instituted the better the result. If a clearer understanding of this problem existed, much of the needless loss of ocular efficiency could be prevented.

Detection of ocular defects in children is a responsibility not only of the oculist but also of the pediatrician and the family physician. In certain respects the latter two have the greater responsibility, because the child is under their care from the onset and the parents depend upon them for proper advice. The attitude that the physician takes toward the problem may have profound influence upon the future of the child.

Because the pediatrician and family physician play an important role in the early recognition of ocular defects, it seems advisable to call their attention to the importance of this problem and to review some pertinent points.

Frequency of Eye Defects

Accurate data are not available as to the frequency of ocular defects in the preschool child. However, some concept can be obtained by presenting data pertaining to children of school age. It is logical to assume that much the same situation applies to the pre-

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, St. Louis, Missouri, March, 1954.

school child as is found in the school-age child.

Available data indicate that eye defects are present at the school age in 20–25 per cent of children. For example, a survey in the public schools in Pennsylvania of 200,000 children in kindergarten through the twelfth grade revealed that 20 per cent of them were suffering from defective vision or eyestrain. These findings conform to conclusions arrived at in other investigations. The statistics are impressive and drive home the importance of ocular problems in children.

Study of 100 Cases

The symptoms of ocular defects in the preschool child are frequently obscure. The subjective symptoms may be of little assistance. The child rarely complains about poor sight. His vision may be blurred, he may even see double, yet he'll seldom tell anyone about it because he doesn't know just how clearly he ought to see. Likewise the objective findings are usually not evident unless the defect is pronounced, as in strabismus.

In order to obtain something tangible I selected 100 cases from my files of children of kindergarten age. It is assumed that the eye defects encountered in this group just beginning school could to a fairly accurate degree indicate the type of problems which exist in younger children. This limited number is insufficient to permit accurate conclusions, but a study of the cases is at least suggestive and makes it possible to point out certain pertinent facts.

It is of interest to note the factors which prompted examination of these children: In 68 cases it was advised by the school nurse; in 15 cases by the family physician. In eight cases the oculist recommended an examination because of a hereditary tendency in the family. In nine cases the parents observed symptoms that suggested the need for examination.

The following conditions indicated the need for eye care:

A visual defect in one or both eyes.

Strabismus.

Subjective symptoms such as blurring of vision, dizziness, headache, nausea, sensitivity to light.

Evidence of local irritation such as lid irritation, sties and watering eyes.

Symptoms observed, such as holding a book or a small object close to the eyes; rubbing the eyes frequently; frowning; difficulty in reading or in other work requiring close use of the eyes; closing one eye; tilting the head when looking at near or distant objects; blinking more than usual; crying often; showing irritation when doing close work; stumbling over small objects.

Defects Frequently Found

In these 100 cases refractive errors made up the greatest percentage of ocular defects. In 86 cases a significant refractive error was present. There were 8 cases of myopia of slight or greater degree. Myopia of even slight degree in a five-year-old is significant because the tendency to increase in amount is greater in the young and effort to protect the eyes from strain at this time is important.

A high degree of hyperopia was present in 60 cases; astigmatism of significant degree in 48; anisometropia (an appreciable difference in the degree of refractive error in the eyes) in 16.

It is important to point out that in refractive errors, especially when a

high degree of astigmatism, anisometropia or hyperopia is found, amblyopia (partially developed vision) is usually present in one or both eyes. This is significant because if amblyopia is untreated when the child reaches four or five years of age, the vision will remain partially developed. Since amblyopia begins in infancy, it is important that treatment be started early.

Treatment of Strabismus

Strabismus was present in 29 cases. Seventeen had been previously treated; 12 had not. The importance of early care of strabismus cannot be overstressed.

In this connection three well-established facts should be emphasized: that treatment should be started the moment strabismus is recognized, even though the child is less than one year of age; that in a high percentage of children crossed eyes can be straightened by means of proper and complete correction of refractive errors and with orthoptic training; and, most important, that the neglected crosseyed child loses vision in the deviating eye unless measures are taken to correct the defect during the preschool age. Vision once lost is rarely regained after the age of six. This constitutes the largest single group in which there exists serious impairment of vision in one eye.

One is repeatedly impressed with the fact that physicians whose advice is first sought by parents of children with crossed eyes do not properly appreciate that this loss of vision occurs in the deviating eye and is avoidable. Amblyopia—loss of vision in the deviating eye—results from involuntary suppression or inhibition of vision to prevent diplopia. If treatment can be started at an early age, this amblyopia can usually be prevented, or vision can be reclaimed by proper treatment.

It is remarkable how many parents of children with strabismus bring them for examination only when they attain school age, or for esthetic reasons. These parents apparently have the impression that treatment is unnecessary and without prospect of benefit until the child is ready for school. When informed that the deviating eye has defective vision they express great surprise and not infrequently resentment against earlier advice they have obtained.

In strabismus preventive measures are of greatest value. It is a fallacy that crosseye is outgrown. During the early years these cases should have prompt attention and careful supervision to help the turned eye develop normal vision. Later on, when the child reaches school age, fusion exercises can be given to create the desire in the brain for the eyes to work together.

Glasses do not correct strabismus in all cases because a certain percentage is caused by mechanical difficulty, such as a developmental defect. In this group surgery is usually indicated and should be performed at an early age. Surgery is usually necessary in neglected cases of long standing where a refractive error is the basic cause. However, when the refractive error in such cases is corrected early, surgery is usually not necessary.

Although the partially seeing eye may be straightened by surgical intervention, the child usually continues to use only one eye in seeing. This partial blindness is far more serious than commonly believed. In various forms of strenuous athletics during boyhood,

for example, the possibility of injury to the useful eye is a real hazard. The danger may be less during active adult life, although a person with this defect is usually discriminated against when seeking industrial employment.

Other Defects

Latent muscle defects were present in 16 cases. These muscle problems are not evident on casual examination and are revealed only by careful testing. They exert a strain on binocularity and are a potent cause of eyestrain. Early care relieves the developing ocular apparatus of a handicap and permits a normal development with elimination of symptoms of eyestrain.

Heredity was an important factor in many of the cases. When parents have eye defects, or have one child with an eye defect, there is a strong suggestion that other members of the family may have eye defects and should be examined.

Injury, congenital cataract and certain other defects were found less frequently. Because of space limitations they will not be discussed here.

Care at Birth

The physician's responsibility for the child's eyes begins before birth. Many ocular tragedies can be prevented if proper measures are taken. Treatment of the mother may protect the child's eyes against the effects of diseases such as syphilis, toxemia of pregnancy, focal infection, measles and diabetes.

Immediately after birth the baby should be examined for congenital defects and birth injuries (due to prolonged labor, or the use of forceps).

Following this initial examination the eyes should be checked at regular intervals. This is best accomplished by having the periodic general examination of the child include an examination of the eyes. A defect which was not evident at birth may be manifested at a later examination. This routine observation should continue even after the child enters school. The physician is responsible for the health of the eyes just as for other parts of the child's body, even through adolescence.

Unfortunately some parents and even physicians have misconstrued the school nurse's function. They frequently conclude that a 20/20 reading made by the nurse or teacher means all is well, and thus they have a false sense of security. A note telling that a child has passed a test should not be sent home. Reports should be only of non-passing and should not give information other than that.

During the early years of life the eye examination is objective in nature. Examination of the external eye will reveal any abnormality of the lids or eyeball. The position of the eyes can be checked by holding a spot of light in front of the child and noting the position of the corneal reflexes.

In older children a cover test can be performed. This may reveal a muscle imbalance not otherwise evident. The cover test is done by having the child fix on a point of light and while he is fixing cover one eye and then the other. If an imbalance exists the eye will be seen to deviate under cover.

The interior of the eyes should be checked with the ophthalmoscope at birth and periodically thereafter. The pupils must be dilated with homatropine in order to obtain a satisfactory view.

Subjective tests for vision are of little value in the very young child.

Simple tests such as following a light will show whether or not he has vision. In the two to three-year-old, visual acuity can be estimated by having him pick up objects set on the floor at varying distances. A more exact test of visual acuity at this age can be made by having the child name a simple article held at varying distances—small toy, button or coin.

In testing the vision of a four-year-old the circular card on which there is a simple symbol such as a hand can be used. If not understood, a more simple symbol of a child holding his arms in various positions can be tried. Instructions are given to the mother at the first visit to the doctor's office, and the tests are carried out at home. Such tests give an approximate idea of the vision and, more important, a comparison of the vision of the two eyes.

In the child five to seven years of age, the Symbol E chart gives satisfactory results. The Snellen chart can be used with many eight-year-olds.

After over thirty years of experience in dealing with this problem I am convinced that its ultimate solution is to have every child when he reaches the age of two screened by an eye specialist. Such a screening is a highly technical procedure and calls for a background of special experience. A screening does not involve an extensive examination because a few tests will reveal the status of the eyes. If a question arises, more detailed testing with cycloplegia can be done. Under this routine defects can be detected and treated at the time the greatest development of the eyes occurs; and thus can be prevented the irreparable damage that results when bad habits become deeply ingrained and when the eyes are in a less plastic state.

LESLIE DANA MEDAL AWARDED TO COL. E. A. BAKER

Col. E. A. Baker, managing director of the Canadian National Institute for the Blind, is the 1954 recipient of the Leslie Dana Medal, awarded annually for public service in sight conservation. Distinguished as an able administrator of the Canadian institute, Col. Baker has also done outstanding work for over 35 years in aiding research, and in the appointment of fellowships to investigate specific problems in blindness prevention. He has been concerned with surveys and the provision of medical aid in the more inaccessible portions of Canada, among the Eskimos and numerous Indian tribes, as well as in isolated villages of Labrador and Newfoundland.

Col. Baker sponsored the first mass vision survey of school children in Toronto, a project which led to the establishment of facilities for partially seeing children in that city; and he instigated the first national survey of the incidence and causes of blindness in Canada.

DR. HISCOCK HONORED

At the American Public Health Association meeting, Dr. Ira V. Hiscock, chairman of the department of public health at Yale University, was honored by being given the 1954 Elizabeth S. Prentiss Award of the Cleveland Health Museum for his work in the field of public health education. He was also named president-elect of the American Public Health Association.

Dr. Hiscock is a member of NSPB Board of Directors, Executive and Professional Advisory Committees.

THE INTERPROFESSIONAL COMMITTEE

From the Viewpoint of an Ophthalmologist

ALSON E. BRALEY, M.D.

Iowa City, Iowa

Better public understanding of the various eye services and improved relationships between medical and non-medical groups are being developed through the joint committee formed in 1950.*

DURING recent years it has been suggested from time to time that a national committee representing ophthalmologists, optometrists and opticians might help to improve relations between these groups and contribute greatly to public education in eye care. It was the enthusiasm of Dr. Avery D. Prangen of Mayo Clinic for this idea that finally resulted in action, and the National Interprofessional Committee on Eye Care was formed in 1950. Sponsored medically by the American Committee on Optics and Visual Physiology, the committee is made up of four representatives each from ophthalmology, optometry and opticianry. The Office of Naval Research and the National Society for the Prevention of Blindness are also represented.

During a period of service in the Navy I was in close contact with all personnel interested in eye care, and became very much impressed with the need for close cooperation. The majority of the optometrists I encountered were good men of high ideals who tried to give the patient the best possible service.

In civilian life mutual distrust among the groups has been built up. The optometrist distrusts the ophthalmologist and the optician, and the ophthalmologist and optician have little confidence in the optometrist. I believe in the honesty of man, and that every individual tries to do his share for mankind. In eye care there is interdependence of each group. None of us can act alone. Both the ophthalmologist and optometrist must depend upon opticianry to supply frames and glasses. The optician is dependent upon the ophthalmologist and optometrist to supply the demand for his products.

Ophthalmologist's Viewpoint

In 1947 Dr. Derrick Vail, in his chairman's address before the AMA Section on Ophthalmology, discussed the problems in the field of eye care

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, St. Louis, Missouri, March, 1954.

and the need for educating and protecting the public in relation to such services. He made the following suggestions:

"First, the ophthalmologist must take a more active part in instructing this non-medical group in the recognition of ocular pathologic processes. This does not imply that the optometrist must be taught definite diagnosis, for I believe this to be impossible because of his lack of medical training. But I do believe that he can be taught to recognize that something is wrong and, what is more important, that he can be impressed with the moral necessity of seeing that such a patient consults an ophthalmologist, which he has been loath or reluctant to do up to the present. The teaching of the optometrist by the physician is a practice that has gone against the grain, but it is a sworn duty to protect the patient, and this responsibility must be carried out.

". . . the second suggestion . . . is to support that small but intelligent group among the optometrists themselves who are working and striving to elevate the ethics, standards of education and sense of duty to public welfare among their own colleagues. The blatant newspaper, radio and neon sign advertisers are repugnant to them as well as to the ophthalmologists. This group is valiant and deserves active support, for in no other way can the advertiser be driven from the field of refraction care of the public. The medical group cannot possibly accomplish this; its members have neither the time nor the legislative talents nor even the interest to attempt this by themselves . . .

"The public, too, must be educated, if at all possible, which I doubt, to know the difference between the doctor of medicine and the so-called doctor of optometry. Finally: Legislation must be sought that will hold the optometrist legally responsible for his diagnostic errors and see that he is subject to the same court of malpractice . . ."

Work of Iowa Committee

One aim of the national interprofessional group is to sponsor state committees and early in 1952 I was instrumental in organizing such a committee in Iowa. Its objectives, based on specific local needs, have been stated as follows:

"This Committee deems its objectives to be the full deliberation of all facets of relationship between the professions of Ophthalmology, Optometry, and Opticianry, to the end that any and all practices which can detract from or impair the quality of eye care to the general public be eliminated; and that everything feasible be done to ascertain, encourage, and foster thorough interprofessional relationships best calculated to obtain optimum eye care to the general public; with the realization that the proper sphere of activity of this group of necessity, for the present, must be limited to the making of recommendations to the respective parent groups."

The Iowa Committee has made considerable progress in curbing questionable advertising of eye services in the state. The most widely read newspaper, the *Des Moines Register*, has carried many such advertisements for the past several years. During the past six months these have been reduced markedly. At the present time only one group advertises the price of its services in this newspaper.

A few study groups of optometrists in the state have invited ophthalmologists to talk to them. Ophthalmologists have cooperated with local optometrists in nearly all sections. This has been brought about by individuals meeting to discuss mutual problems.

A new society of retail opticians has been started, and its aims have been carefully outlined. A model law has been drawn up for opticianry and is being presented to the state legislature. We hope that within the next two years there will be licensed opticians.

A clear definition of the method of examination of school children has been devised and suggestions submitted to the state Board of Public Instruction. Instructions and bulletins have been prepared for school and county nurse associations. Considerable personal instruction has been given.

A better relationship between orthoptic technicians and optometrists has been developed. The importance of orthoptics and its place in the field of eye care is better understood.

Problems of Rural State

A rural state such as Iowa has a major eye problem. Ophthalmologists are attracted to the large cities because they feel they will get more surgery. We accept residents who are likely to stay in Iowa, in preference to others, but the demand for services of ophthalmologists elsewhere is so great that these men are lured away. An example is one of the young men who finishes shortly. He has had lucrative offers from California, Utah, Colorado, Illinois, Ohio and Kentucky, as well as three excellent offers in Iowa. Since our state does not have as inviting a climate as some other areas, the tendency is for these men to migrate. We are therefore more and more dependent upon cooperation between the optometrists and ophthalmologists.

If the welfare of the patient can always be kept foremost in the minds of all who deal with eye services there will be no disagreements. Most ophthalmologists in Iowa are extremely busy. They are making appointments four to eight weeks in advance and it is little wonder that the public turns to other sources for professional advice. The optometrists should be taught not necessarily to recognize disease but to recognize when something is wrong. They should immediately refer a problem that they do not understand. One of the difficulties with the referral is the return of the patient to the optometrist. I know that many ophthalmologists make a sincere effort to send these patients back. So long as the patient has a free choice of doctors it is not always possible to get him to return to the referring physician or optometrist. The interprofessional committee has aided materially with referrals and has helped to settle a number of grievances that have arisen.

DELTA GAMMA SCHOLARSHIPS

The Delta Gamma Foundation is offering scholarships for the training of teachers of partially seeing children, specialists for blind preschool children and orthoptic technicians. Full details and application forms can be obtained by writing to Mrs. Andy O. Campbell, Scholarship Chairman, Sight Conservation and Aid to the Blind Project, Delta Gamma Fraternity, 917 N.W. 40th Street, Oklahoma City, Okla. Application deadline is May 1, 1955.

ELECTROENCEPHALOGRAPHIC CHANGES IN CHILDREN WITH STRABISMUS

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A progress report on a study currently being made under a grant from the National Society for the Prevention of Blindness.*

A TOTAL of 1,395 children up to the age of 16 years have been studied. The cases have been divided into three groups. The first group contained 640 patients for whom complete history and neurologic and eye examinations were available. Of this group, 180 normal children without neurologic or an ocular pathologic condition comprised the control series. The remainder of this group was made up of 460 consecutive cases of cerebral palsy.

The second group consisted of 605 children with seizures and abnormal electroencephalograms, for whom a record of the eye findings was available, but for whom complete history and physical findings were not given.

The third group of 150 cases was made up of patients who were normal except for their ocular pathology.

The first two groups comprised 1,245 cases, of which 361 had eye disorders. Strabismus accounted for 73 per cent of these cases. In the third group, 139 of 150 cases were strabismus problems. The remaining 11 cases in this group consisted of congenital cataracts, ptosis, nystagmus of ocular origin associated with compound myopic astigmatism, retrolental fibroplasia, post-traumatic amaurosis, and optic atrophy.

Method of Study

All electroencephalograms in this study were taken with the patient both awake and asleep. Sleep was either spontaneous or induced with 0.75 to 1.5 grains of seconal. Sleep records were considered necessary for the proper study of this series, since during sleep a much higher proportion of abnormalities becomes manifest in the EEG. Reference electrodes and the Grass eight-channel electroencephalograph instrument were used in all cases, and from eight to 12 leads were employed. Often both a low and a high occipital lead were used. The leads were glued to the scalp with collodion.

We considered spike foci and slow-wave foci to be major pathologic alterations. Persistent amplitude asymmetry between the right and left occipital leads, and limited to this area, was classified as a minor EEG abnormality. Present experience marks the asymmetry as abnormal,

* Digest of a paper presented at the Annual Conference of the National Society for the Prevention of Blindness, St. Louis, Missouri, March, 1954.

since it did not occur in our normal control group. For purposes of this study, EEG abnormalities were divided into the generalized group, in which the seizure activity occurred simultaneously in all leads, and the focal group, in which the EEG disturbances occurred independently in one or more areas.

Results in Control Group

In the 180 control children only 0.5 per cent had occipital foci in the EEG. The group of 460 cerebral palsy cases had a high incidence of focal EEG changes. Of the 305 cases with normal eyes 38 per cent had occipital foci, and 35 per cent had changes in other leads. The cases with ocular pathology had twice the focal involvement in the occipital area (and only one-fourth the involvement in the extra-occipital areas), as the group with normal eyes.

The presence of seizures in cerebral palsy increases the incidence of focal seizure activity throughout the brain, including the occipital areas. However, when, in addition to seizures, eye disorders were present, a significantly greater percentage of occipital focal EEG changes occurred than when the eyes were normal. There was a concomitant drop in focal activity in the other leads when eye disorders were present.

Second Group

The second group of patients with which this report deals consisted of 605 patients with seizures whose EEGs demonstrated focal disorders. Of this group 206 had eye disorders. The 253 patients with abnormal EEG foci sparing the occipital region contained only nine per cent with pathologic eye findings. Of the 352 patients with occipital foci, 52 per cent had abnormal neuro-ocular findings.

Third Group

The third group comprising this study consisted of 150 patients who were normal except for their eye problems. Of these, 111 had normal and 28 had abnormal EEGs. In our first series of 100 cases there were 18 abnormal EEGs, and all changes were limited to the occipital leads. Nine cases had persistent amplitude asymmetry, eight had spike foci, and one had slow-wave foci. All of the abnormal patterns were found among the 89 strabismus patients, the 11 with miscellaneous ocular pathologic findings having normal tracings. In our second series of 50 strabismus patients there were 10 abnormal tracings. In addition to the 4 cases with occipital lead changes there were 3 patients with spike foci in extra-occipital leads and 3 patients with generalized seizure activity. The trend in the material has suggested that there is a higher incidence of EEG abnormalities in the exotropias than in the esotropias.

There has been no statistically valid correlation demonstrated to date among such sensory phenomena as amblyopia ex anopsia, fusion, retinal correspondence, or visual acuity and electroencephalographic abnormalities. The laterality of the ocular deviation and the refractive error show no correlation with the EEG changes.

The series is being expanded to clarify some of the trends and relationships which have been noted in our study to date.

NSPB Annual Conference
March 16, 17, 18, 1955
Hotel Statler, New York, N. Y.

Highlights of the 17th International Congress

Ophthalmologists from many countries meet for discussions in New York, with glaucoma and uveitis the main themes.

GLAUCOMA and uveitis were the two main themes of the Seventeenth International Congress of Ophthalmology, held in New York City, September 13–17, after a preliminary meeting in Montreal. Three thousand eye specialists from more than 50 countries attended.

Dr. Redmond Smith, of the London Institute of Ophthalmology, described studies he made recently in thrombotic glaucoma, a form of the disease in which the tension in the eyeball is associated with a clotting or thrombosis that obstructs the veins of the retina. A peculiar feature of this condition is the appearance of new blood vessels on the iris. Dr. Smith wanted to determine the relationship of the thrombosis to the high pressure, the cause and role of the new vessels, and the relationship of thrombotic glaucoma to primary glaucoma. After a consideration of studies made by others as well as his own he advanced the theory that the appearance of the new vessels is due to lack of oxygen in the retina. Dr. Smith thought this might lead to chemical reactions which would produce a membrane in the eye, closing the filtration point and creating pressure.

Dr. E. S. Perkins, also of the London Institute, described animal experiments which demonstrated the influence of certain nerves on circulation and blood pressure within the eye. These experiments involved the cutting and stimulating of nerves which might be expected to affect the expansion or contraction of blood vessels. After this procedure, the investigators measured the blood pressure in the eyes as well as the general blood pressure, and observed the blood vessels under a microscope.

It was found that some of the vessels dilated slightly when the sympathetic nerve in the neck was cut, while some of the same vessels contracted so severely that all blood left them when this nerve was stimulated by electricity. In addition the blood pressure always fell noticeably after such stimulation of the nerve. Definite changes could also be seen when the fifth cranial nerve was stimulated, but no effect on the eyes appeared from stimulation of the third and seventh cranial nerves. Dr. Perkins thought the results of this research, indicating that some of the nerves in the region of the eye are capable of influencing the circulation and the pressure within the eye, may be important in the solution of the problem of glaucoma.

Emotional Factor in Glaucoma

Dr. Edward Hartmann, of Paris, suggested that information useful in the treatment of this disease might be gained through use of the electroencephalograph. Dr. Hartmann, who has been interested for several years in the importance of the emotional factor in glaucoma, stated that the emotional disturbance first recognized in acute

glaucoma appears to be equally important in other types of the disease.

Impressed by the fact that glaucoma sufferers could tolerate sedatives in quantities comparable to those required in epilepsy, Dr. Hartmann and an associate undertook to study the condition of the nervous system in their glaucoma patients by means of the electroencephalograph, which has been of great value in the study and control of epilepsy. In 18 tracings made only two showed normal brain waves. Dr. Hartmann raised the question whether the nervous disturbances were related to the inherent characteristics of the patients or were the result of the illness, stating that he felt they were related to the cause rather than the consequences of the disease. In 11 patients who had psychiatric examinations he attempted to correlate the results of these examinations with the electroencephalograms. There was a certain degree of correspondence, he reported, but the numbers were too small to admit any conclusions.

Dr. Hartmann expressed the opinion that a promising field for study had been found and suggested several subjects for research. Among them were changes in the encephalogram after the tension in the eye has been relieved; comparison of data from the tracings of patients with different forms of glaucoma; and correlation of the brain wave tracings with psychiatric data.

Psychosomatic Factors

The theory that glaucoma may be in part a psychosomatic disease, stemming from emotional inadequacies, also received support from Dr. Ulrike Salzmann of Switzerland. After a study of 50 glaucoma patients Dr. Salzmann concluded that they were primarily persons whose need for love and affection had never been satisfied, and that they had tendencies to injure themselves because of these unsatisfied needs. On the basis of another analysis Dr. Salzmann advanced the theory that glaucoma patients have a psychic structure similar to that of persons with epilepsy, which he felt indicated a basic relationship between the two diseases. A hereditary aspect was suggested by the fact that the frequency of "epileptiform" disease was found to be slightly greater in the relatives of patients than in the general population. This was true not only of blood relatives but of relatives by marriage, or "elective affinity." Dr. Salzmann felt that, if further researches confirm these provisional results, glaucoma may well be regarded as epilepsy of the eye or as an epileptic equivalent.

Glaucoma in the Young

Dr. Jules François, of Belgium, asserted that juvenile glaucoma is not a distinct disease as some students believe. While it has been argued that a hereditary factor different from that in recognized congenital forms exists in about 20 per cent of the cases of juvenile glaucoma, Dr. François maintained that the hereditary factor is no less frequent in glaucoma of adults, but has merely been studied more frequently in the children's disease. In addition it is more difficult to trace in the elderly because most of their ancestors are no longer living.

Other Hereditary Aspects

The hereditary aspect of glaucoma also received attention from Drs. Leo Kellerman and Adolph Posner, of Manhattan Eye, Ear and Throat Hos-

pital, who studied relatives of 199 patients to find out how many unsuspected cases of glaucoma could be identified. Of these patients, all of whom had primary glaucoma, 13.5 per cent knew the disease had occurred in their families, while 5.5 per cent gave histories which indicated the family tendency. Upon examination of 192 of their relatives who were unaware of having any eye disease, eight (or 4.16 per cent) were found to have definite primary glaucoma of the chronic simple type and 11 (or 5.7 per cent) were considered borderline cases.

In comparison the doctors noted that the incidence of glaucoma in unselected samples of the general adult population has been variously estimated at only .5 to two per cent. In addition, it was found that tension in the eye follows a family pattern. In families with glaucoma, high "normal" tensions were found in 24.4 per cent; in those that showed no glaucoma, only 6.4 per cent had high "normal" tensions.

Dr. Kellerman and Dr. Posner were also interested in learning more about certain phases of the disease which might be inherited, particularly the shape of the angle of the anterior chamber of the eye. A narrow angle where the cornea meets the iris interferes with the drainage of the eyeball and thus contributes to high tension, one of the chief symptoms of glaucoma. To study the role of the narrow angle, the doctors compared the angles in patients with two types of glaucoma, the chronic simple and the acute congestive. In the latter type it has long been observed that a narrow angle "runs in families" and they hoped to learn whether it is the inherited characteristic responsible for transmission of the disease.

"Of 181 eyes of relatives of chronic simple glaucoma patients, 12, or seven per cent, had narrow angles," the report stated, "whereas among 48 eyes of relatives of acute congestive glaucoma patients 12, or 25 per cent, showed narrow angles." The high percentage of narrow angles in the relatives of the patients with narrow angle glaucoma demonstrates the hereditary nature of this characteristic, the doctors concluded.

Complexity of Uveitis

Uveitis, an inflammation of the part of the eye which contains most of the blood vessels and the pigment, is a disease of such complexity that it was selected as one of the two official subjects to be considered at the Congress. The discussion was opened by Dr. Alan C. Woods, director of the Wilmer Institute of Ophthalmology at Johns Hopkins University School of Medicine, who has given special attention to this condition for a number of years.

Dr. Woods described two broad types of endogenous uveitis, a form brought on by substances or processes within the body. One is a chronic, progressive, nonpurulent disease which results from an infection; the other is an acute, nonpurulent inflammation that follows damage by some noninfectious agent—physical, toxic or allergic. These appear to be distinct diseases, he said, but confusion arises from the fact that they occur together at times. An organism which causes an infection may simultaneously be producing hypersensitivity in the tissues.

Since 1941 intensive study at Wilmer Institute has resulted in greater ac-

curacy in diagnosis of the infectious type of uveitis, Dr. Woods reported. For example, a considerable number of cases formerly ascribed to tuberculosis were found to be actually due to undulant fever, sarcoidosis, and very recently, toxoplasmosis. These changes reflect increasing knowledge of the disease, he observed.

In discussing the non-infectious type of uveitis, Dr. Woods said it resulted from an acute or chronic "insult" to the tissues—physical, toxic or allergic. In the overwhelming number of cases it is allergic and the most frequent basis of the allergy is a sensitivity of the tissues to bacteria, as distinguished from infection. It is believed that this happens with various organisms but the streptococcus is the only one that has been extensively investigated. Such sensitivity apparently develops during an attack of streptococcic infection, and when the person is again exposed to the germ the eye flares up with an allergic reaction comparable to the familiar attack of hay fever after exposure to pollen.

Dr. Woods reported that attempts had been made to desensitize some of those who were found sensitive to the streptococcus. Of 36 patients so treated, 27 had no attacks as long as their desensitization could be maintained; in three, only partial desensitization was achieved, but their attacks were less severe.

The allergic attack of uveitis usually comes on acutely and reaches its maximum in two or three days, Dr. Woods said. It may continue, however, from one to several weeks and the eye then recovers without great permanent harm. If repeated attacks occur the eye does not recover easily and the disease resembles the chronic type.

The two types of uveitis are comparatively easy to recognize when they are uncomplicated, Dr. Woods stated, but there are stages in both diseases at which it becomes difficult to differentiate them. Some progress has been made in the clarification of the diagnosis by the use of hormones from the adrenal glands, cortisone or corticotropin. In some unknown manner these hormones suppress the active phases of both types of uveitis, and the underlying organic changes in the eye are revealed; the physician is then able to distinguish one from the other.

Allergy in Uveitis

The role of allergy in uveitis was also discussed by Dr. Norman Ashton, of the London Institute of Ophthalmology, who mentioned the fact that while the allergic forms of the disease arise in most instances from contact with bacteria and their products, protein in the tissue of the lens and the pigment can cause a similar reaction. Dr. Ashton said the eye physician's problem was to ascertain the extent of the importance of allergic processes and to be able to segregate with some degree of certainty those forms of uveitis which are primarily allergic in origin. He disagreed with Dr. Woods as to the value of sensitization tests and attempts at desensitization based on such tests, saying that they were not practicable on a large scale because there are many strains of the streptococcus alone, not to mention other bacteria, which may cause allergic uveitis. The answer to this problem might come from research directed toward determining whether desensitization towards a particular organism is necessary or whether some nonspecific method might be effective, he

said, but it would be a matter of extreme difficulty to devise a well-controlled investigation to clarify this point and so far it has not been done.

Dr. Ashton urged eye specialists not to take too narrow a view of the causes of uveitis, saying that new ideas were emerging from research in pathology which may throw further light on what he called "this puzzling miscellany." One of these ideas is that one's own tissue proteins may become so altered by chemical reactions with other substances that they act like foreign bodies. Dr. Ashton thought the occurrence and effects of these changes in the body's tissues warrant careful investigation.

Effects of Nuclear Radiation

Dr. Robert M. Sinskey, of the Division of Ophthalmology at Duke University School of Medicine, reported the results of a survey made in Hiroshima and Nagasaki under the auspices of the Atomic Bomb Casualty Commission to determine the effect of nuclear radiation on the eyes of the survivors of the atomic bomb explosions there. Dr. Sinskey noted that the discovery of radiation cataracts in American physicists had inspired a similar investigation in 1949–1950, also under the auspices of the Commission, and that the earlier investigating team had reported finding 100 survivors with radiation cataracts.

In Dr. Sinskey's survey, which took place in 1951–1953, 3,700 persons were examined, including many who had not been exposed to nuclear irradiation. The conclusion drawn from this survey was that, while nuclear irradiation affected the eyes of a large proportion of the survivors of the atomic bomb explosions, actual loss of vision occurred only in rare instances. "In the total survey," Dr. Sinskey said, "there have been 154 survivors with posterior subcapsular plaques large enough to be visible with the ophthalmoscope. Those opacities not visible with the ophthalmoscope in the greater percentage of survivors can be excluded from consideration because they obviously do not decrease visual acuity under standard testing procedures. Of the 154 survivors, 129 can be corrected to 20/50. The remaining 25 have less than 20/25 but all of these have serviceable vision with proper lenses."

"Although some cases may have been overlooked," he said, "intensive search produced only four survivors who had operative procedures presumably because of loss of vision from radiation effects on the lens."

Decline in Infectious Diseases

Dr. Arnold Sorsby, of London, and Drs. A. Franceschetti and H. Koenig, of Geneva, reported on the decline of blindness in childhood from infectious diseases. Experience in England, Wales and Switzerland shows that the decline in the incidence of juvenile blindness in these countries has been steep and regular in recent decades. The doctors particularly pointed out the fact that ophthalmia neonatorum, which used to be a leading cause of blindness, now accounts for only an occasional case. This decline was attributed to three developments: the introduction of treatment with silver nitrate applied to the eyes of newborn babies; the passage of laws requiring that the condition be reported and that treatment facilities be provided; and the discovery and use of the sulfonamide drugs and penicillin. Other

less common infections which cause blindness have also declined, the doctors reported, and in consequence the frequency of the hereditary and congenital types of blindness has become more obvious. Figures presented by Dr. Sorsby showed that from 1923 to 1942 there was a steady decline in blindness in England and Wales, but that since 1942 the rate has remained stationary at about 21 per 100,000. "We seem to have reached the hard core of congenital and hereditary anomalies for which public measures and therapy are as yet largely powerless," he concluded.

The blindness rate in Switzerland is about the same as that for England and Wales and there, too, ophthalmia neonatorum has dropped to a negligible percentage. In a study of 88 children in Swiss institutions for the blind in 1951 it was found that 75 per cent suffered from hereditary forms of blindness. Juvenile glaucoma and congenital cataracts were responsible for 17 per cent each. The doctors felt that cases of this type might benefit from earlier and more efficient surgical treatment, but they emphasized that the most important factor in reducing the incidence of hereditary forms of blindness was the prevention of marriages among relatives.

Further decrease of blindness can be expected only if people know about the risks of even distant consanguinity for the offspring in diseases of the recessive type, it was emphasized. By employing medical as well as genetic education, people could be greatly helped, the number of consanguineous marriages diminished and the incidence of juvenile blindness brought further down. After the drastic reduction of juvenile blindness due to antibiotic treatment, this seems to be the only way of combating the residual problem.

SUCCESS OF SEPTEMBER CAMPAIGN

Messages stressing the vital importance of eye care and basic eye research reached millions of Americans in all parts of the country during the 1954 "Sight-Saving Month" campaign in September. The nation's radio, press and television cooperated to publicize the annual sight-saving event, and free educational material was widely distributed.

Governors in 19 states officially proclaimed September as "Sight-Saving Month" in their areas, and many local groups joined in the nationwide drive for better eye care. Car-cards stressing the theme, "The Most Wonderful Eyes in Town Belong to You," were placed in the transportation systems of major cities. A coast-to-coast spotlight was also put on the campaign by major magazines, including *Redbook*, *Parents' Magazine*, *Charm* and *Compact*.

In addition to newspaper stories and articles, there were radio broadcasts in every state of the union presenting sight-saving information, and television stations in 39 states joined in the effort. As a result of this cooperation from all media of mass communication, many thousands of requests for information about eye problems were received at the headquarters of the National Society for the Prevention of Blindness in New York City. All persons sending requests received a free folder on vision care, "Your Wonderful Eyes," prepared by the National Society for distribution during the September campaign.

Report on Retrolental Fibroplasia at AAOO

Evidence obtained by investigators reveals that oxygen administration for even short periods of time is intimately associated with the incidence of the disease.

THE practice of giving oxygen to all premature infants formerly recommended as routine supportive therapy in hospitals throughout the United States must be seriously reconsidered. This was indicated by the work of a team of 75 pediatricians and ophthalmologists at a Symposium on Retrolental Fibroplasia held by the American Academy of Ophthalmology and Otolaryngology as part of its annual meeting at the Waldorf-Astoria in New York City on September 22.

Dr. V. Everett Kinsey of the Kresge Eye Institute, Detroit, who acted as spokesman for the group, presented *preliminary* results obtained in a controlled study conducted during the past year in 18 hospitals.

Evidence obtained by the investigators, Dr. Kinsey said, now revealed that oxygen administration for even short periods of time was intimately associated with the incidence of retrolental fibroplasia. While it had been feared that the curtailed use of oxygen for premature infants might cause an increase in mortality, statistics of the study showed this was not so; there was no significant difference in mortality with the routine use of oxygen and curtailed use of oxygen. On the basis of these observations, therefore, the group of investigators felt that oxygen should be administered to premature infants only in times of clinical crises rather than as a routine hospital procedure.

The plan of the study was to place the premature infants in a number of hospitals into two groups, the first to receive the usual amounts of oxygen, and the second to receive oxygen only because of critical symptoms of oxygen deficiency. All other factors concerned with the care of premature infants, such as feeding, vitamins, lighting, temperature and humidity, were to be similar for both groups. Only premature infants weighing 3 lbs. 5 oz. or less at birth, and who survived 48 hours of life, were included in the study.

The total number of infants reported on for the first six months of the study was 391, of which 68 were to be given routine oxygen and the remainder curtailed oxygen. Week-by-week analysis of mortality showed no differences. The mortality rate (determined after the first 48 hours of life) was 22.2 per cent in routine oxygen and 20.1 per cent for those in curtailed oxygen.

The eyes of the premature infants in both groups were examined with regularity to determine the presence of retrolental fibroplasia. Retrolental fibroplasia was classified at two different stages of development—the active stage (which usually is confined to the first three months), and cicatricial

stage (where permanent damage to the eye has occurred). In each stage, severity was classified by a 1–5 progression.

Of the 53 surviving infants who received routine use of oxygen, 72 per cent developed retrolental fibroplasia in some one of the five active states, whereas of the 245 infants in the curtailed group 30 per cent developed the disease. This difference in incidence was even greater in the cicatricial stage, where 25 per cent of those infants who received routine use of oxygen showed permanent change as compared to only 6 per cent who received curtailed oxygen. These differences were considered to be highly significant by the statistical consultants of the study.

Analysis of the relation of the incidence of retrolental fibroplasia and length of stay in oxygen showed that most of the risk of contracting the disease was incurred by exposures to oxygen during the first week of life. This was one of the most important findings because it emphasized the necessity for restricting oxygen even during the first few days after birth of the premature infant. Studies by Ashton and Patz on the results of animal experimentation also have demonstrated the deleterious effect on the eyes of even short exposures to oxygen.

In summarizing the opinions of the panel, Dr. A. B. Reese said:

"While great advances have been made in the better understanding of the etiology of RLF, it is probable that even with judicious use of oxygen there will be occasional cases of RLF. It is hoped that future investigations will reveal other etiologic factors.

"It must be remembered, however, that oxygen is sometimes a lifesaving measure and it will be necessary to continue its use for infants with cyanosis and definite signs of respiratory distress. . . . When oxygen is indicated, every effort is made to keep the concentration in the incubator below 40 per cent and to discontinue treatment as soon as respiratory distress is relieved."

Infantile Glaucoma

Dr. Samuel J. Meyer of Chicago summarized the AAOO symposium on infantile glaucoma. He stated that while the defect-producing disease may not become evident for some time after birth it is usually present by the end of the first year. The incidence varies from 0.03 per cent to 0.079 per cent of all clinic patients. The disease may be present at birth in 30–60 per cent of cases.

Sensitivity to light, blinking of the lids, and tearing constitute the earliest symptoms of the disease. The late objective signs consist of enlargement of the globe with an increase in the corneal diameter, and a corneal haze of varying degree. The intraocular tension must be carefully measured, usually under deep intra-tracheal anesthesia.

In the past the prognosis for infantile glaucoma has been very poor. However, since 1939 the outlook for useful vision has improved greatly, coincident with the popularization of an operation called goniotomy, which was introduced by Dr. Otto Barkan of San Francisco. In this procedure a special knife is passed through the chamber in front of the pupil and through the closed angle of the opposite side, thereby reopening the drainage into the normal channels.

An operation called gonio-puncture

recently advocated by Dr. Harold Scheie of Philadelphia may increase the successful results even more. If the tension is not controlled, there is a slow progression of these classical signs: the corneal opacification increases, the eyeball enlarges, the ocular tissues thin out, and rupture of the globe may occur.

The members of the symposium believe that early diagnosis and surgical intervention are indicated. Goniotomy is the operation of choice. Goniopuncture in combination with goniotomy is indicated if the latter is unsuccessful.

New Treatment in Uveitis

The subject of uveitis, one of the two main themes of the International Congress, also received attention at the meeting of the AAOO. Scientists from the National Institute of Neurological Diseases and Blindness and the National Microbiological Institute, U.S. Public Health Service, reported that pyrimethamine, one of the new agents used in the treatment of malaria, has shown encouraging results in the treatment of granulomatous uveitis caused by the parasitic infection, toxoplasmosis.

Dr. Ralph W. Ryan, acting chief of the branch of ophthalmology at the National Institute, spoke for the group, indicating that a total of 29 cases actively affected by granulomatous uveitis caused by Toxoplasma were treated for varying periods with the new drug. Twenty-five of the 29 patients showed definite improvement of the eye condition; three of the remaining four had been under treatment for too short a period of time to make a positive evaluation.

Dr. Ryan pointed out that a larger number of patients must be treated over a longer period before final evaluation of this therapy can be made. However, in view of the rapid improvement in visual acuity of more than 25 per cent of the cases within seven days, it would seem likely that therapy had produced the clinical improvements rather than spontaneous random remission which characterizes the disease.

Dr. Ryan also warned that pyrimethamine sometimes produces side effects which are potentially dangerous, and that for this reason treatment must be carefully supervised.

ROBERT R. CHACE, M.D.

Dr. Robert Rhodes Chace died at his home in Bronxville, New York, on November 24 at the age of 44. He was a good friend of the National Society, one who contributed much to its program of education. For seven years he taught the course in "Eye Hygiene" at Teachers College, Columbia University.

Dr. Chace was graduated from Brown University and Yale Medical School, and interned at Rhode Island Hospital in Providence. He took graduate work in ophthalmology at Columbia University College of Physicians and Surgeons, and was a resident at the Institute of Ophthalmology of Columbia-Presbyterian Medical Center. He was on the staff of Lawrence Hospital, Bronxville, and was the author of many articles in medical journals.

Among Dr. Chace's many public interests was his service as consultant to the division of vocational rehabilitation of the New York State Department of Education.

International POB Congress

THE Congress of the International Association for the Prevention of Blindness held scientific and business sessions in New York on September 13 in conjunction with the 17th International Congress of Ophthalmology. In the absence of the President, Dr. Paul Bailliart of Paris, because of illness, and at his request, Dr. Conrad Berens of New York, Vice-President, presided.

Several papers of unusual interest were presented at the scientific session:

Prevention of Blindness in Children—Statistical and Sociologic Aspects. Dr. Conrad Berens, Dr. Franklin M. Foote, and C. Edith Kerby of New York.

The Decline of Blindness in Childhood from Infectious Diseases. Drs. A. Franceschetti of Geneva, Switzerland, and A. Sorsby of London, England.

Genetic Causes of Congenital Malformations of the Eye. Dr. Harold F. Falls of Ann Arbor, Michigan.

A paper on "*Antecedentes sobre las Causas de Ceguera en la Republica Argentina*" by Drs. Magin A. Diez, Lijo Pavia, Esteban C. Aldrogue and Alfredo D. Grammatico was presented by Dr. Grammatico of Buenos Aires.

Among those who participated in the discussion of the various papers were Prof. A. F. El-Tobgy of Egypt, Drs. Mario Giaquinto of the World Health Organization, S. S. Deutsch of the U.S.A., Pedro Rabadan of Spain; F. Palomino Dena and Daniel Silva of Mexico.

Regret was expressed that Professor Maurice Lamy of Paris was unable to be present to give a scheduled paper on "Role of Embryopathies in the Causes of Blindness."

The new officers of the Association are: Honorary President, Dr. P. Bailliart; President, Dr. A. Franceschetti; First Vice-President, Dr. Conrad Berens.

Other Vice-Presidents: Dr. Moacyr E. Alvaro, Brazil; Dr. Baudilio Courtis, Argentina; Dr. J. Bruce Hamilton, Australia; Professor P. A. Jaensch, Germany; Mr. Frank W. Law, England. Secretary General — Eastern Hemisphere: Dr. Jean-Pierre Bailliart. Secretary General—Western Hemisphere: Dr. Franklin M. Foote. Treasurer: M. de Courson, Paris.

Visit of Dr. Delthil

Dr. Simone Delthil, ophthalmological consultant to the public schools of Paris and chief of the eye service at St. Denis Hospital of Paris, spent approximately six weeks in the United States this fall studying prevention of blindness activities and educational facilities for partially seeing children.

After attending the International Congress of Ophthalmology in Montreal and New York, Dr. Delthil observed work in this field in Poughkeepsie and New York; Washington, D. C.; in several Ohio cities; Bloomington, Chicago, Joliet, Normal, Peoria, and Springfield, Illinois; and in Berkeley, Oakland and San Francisco.

Dr. Delthil said that she was deeply impressed with the work which she observed in this country and will use these studies as part of an official report she is preparing for the French Ophthalmological Society.

New Type of Virus Conjunctivitis Described

A NEWLY isolated group of viruses associated with conjunctivitis, sore throat, fever and occasionally other signs of illness is under study by scientists of the National Institutes of Health at Bethesda, Maryland.

Called APC (adenoidal-pharyngeal-conjunctival) viruses because of locations where virus is more commonly found, they were first isolated from adenoid tissue by Drs. Robert J. Huebner and Wallace P. Rowe, virologists of the Institute of Microbiology, in 1953. Their role in disease began to be clarified early in February, 1954, when Dr. Ralph W. Ryan, head of the eye research branch of the Institute of Neurological Diseases and Blindness, took cultures from cases of conjunctivitis which revealed presence of type three of the APC viruses. Shortly thereafter Dr. Robert H. Parrott, pediatrician of the microbiological institute, found a group of children at the Clinical Center with various manifestations of the disease. During the summer of 1954 a considerable epidemic of the disease occurred in nearby Virginia and was studied by staffs of the two institutes, including Dr. Joseph A. Bell, epidemiologist of the microbiological institute.

The APC viruses were described by Drs. Huebner and Bell at the October 12 meeting of the American Public Health Association at Buffalo, New York. Studies are continuing on all aspects of the viruses. At present type three appears to be the only one of the group of six viruses responsible for known epidemics of conjunctivitis.

The conjunctivitis seen in the Virginia epidemics appeared to have the following characteristics:

1. Usually associated with systemic manifestations such as fever, sore throat and muscle pains or headache.
2. Occurs most often in children.
3. Is often uniocular.
4. Has incubation period of approximately one week.
5. Usually clears spontaneously in one to two weeks.
6. Is non-purulent.
7. Often has lymph follicle hyperplasia in lower conjunctival sac.
8. Redness affects part or all of the white portion of the globe as well as the lids, but lower lid region is most affected.
9. Lymph nodes in front of the ear are rarely enlarged.
10. The cornea is apparently seldom affected.
11. Pain and light sensitivity are seldom severe.
12. Inclusion bodies have not been found.
13. Does not respond to antibiotic medications.
14. Usually does not leave permanent impairment of vision.

WORLD CONGRESS ON ACCIDENT PREVENTION

The first World Congress on the Prevention of Occupational Accidents will be held in Rome, April 2–6, 1955. The meeting has been organized by the *Ente Nationale de Prevenzione Infortuni* with the cooperation of the International Labour Office. Inquiries regarding the program may be addressed to ENPI, 101 via Boncompagni, Rome, Italy.

A STUDY OF NEW YORK'S VISUALLY HANDICAPPED CHILDREN

Helen M. Wallace, M.D., Walter S. Schachat, M.D., Myra Palmer, M.D.
Leah Hoenig, R.N., Samuel Lossef, M.D., and Herbert Rich

A recent review of the procedure for visual examination has suggested some changes that will help to insure correct placement in sight conservation and Braille classes.*

AS early as 1903 the then associate superintendent of schools in New York City recommended that teachers observe and single out pupils with defective vision for observation and a modified educational curriculum.[1] But it was not until the school year 1907–1908 that the New York City Board of Education authorized the establishment of special classes for blind and partially seeing children. Six classes for blind children and for children with seriously impaired vision were opened in 1909; the enrollment in these two groups was about evenly balanced.

In 1915 the first experimental sight conservation class was established. Its success led to the development of other classes and in 1917 the Board of Education formally authorized their extension. Partially seeing children were transferred from the classes for the blind to these new groups. Thus for a period of 37 years special classes for the blind and partially seeing children have been provided by the New York City public school system.

According to the National Society for the Prevention of Blindness,[2] 36 states plus the District of Columbia and the Territory of Hawaii have facilities in 247 cities for approximately 8,000 partially seeing children in 682 classes. These facilities are not all organized as class units. At least four of the units included in the 682 total are completely dispersed with an itinerant teacher servicing partially seeing children wherever they are in the regular classes of their own district schools. Of this national total of 682 classes with 8,000 children, 105 classes with 1,349 children are in New York City. Thus, New York has 15 per cent of the known classes, and 17 per cent of the enrolled children.

For the Braille group, according to the American Foundation for the Blind,[3] 14 states and the District of Columbia have 80 special classes for 700–750. Fourteen per cent of the children are in New York City. For this reason any findings in the New York City group may be of interest and significance to classes and programs elsewhere in the country.

Between November 1952 and January 1953 a study was made of a sample of children currently enrolled in these classes. Among the factors reviewed

* From the Bureau for Handicapped Children, New York City Department of Health. Presented at the Annual Conference of the National Society for the Prevention of Blindness, New York City, March, 1953; and at the Columbia University Bicentennial Celebration, June, 1954.

were criteria and appropriateness of placement, vision testing, and diagnoses of eye conditions. The information revealed in this study was significant and it has been helpful in revising and improving some of the procedures relating to the education of these visually handicapped children.

Class Registration

The total day school registration for 1951–1952 was 907,641. The average register in the 105 sight conservation classes was 1,349; in the 12 Braille classes, 101. Ratios of average registers in the sight conservation group to the total school population remained relatively constant from 1941 to 1948, decreasing thereafter, while in the Braille group ratios increased 52 per cent from 1941 to 1952. Admission ratios to both types of special classes have been relatively constant. At present we have no definite information as to the reason for the significant increase in the Braille class register. One possible explanation might be that of retrolental fibroplasia.

At the time of the study there were 99 sight conservation classes in elementary and junior high schools; six in high schools. Only children with normal mentality are accepted. Braille classes numbered nine in elementary and three in high schools.

Current Program

The special classes are designed to help the pupil compensate for his difficulty and cooperate in the treatment program. The school schedule is so arranged that he is not isolated, but rather carries on much of his work in a regular class. Promotion and graduation are on the same basis as for the child without visual difficulty.

The pupil assigned to a classroom for partially seeing children has an opportunity to recite with the regular grade pupils in subjects where he can function visually without undue difficulty, thus giving him the advantage of association with children of his own grade level as well as the greater individual supervision and increased freedom of the special small class. Teachers of these classes have received special training in the education of the partially seeing child. In the classroom every effort is made to ease visual demands through provision of adequate lighting; movable and adjustable desks and seats; large-print books; typewriters with enlarged type; special globes, charts and other equipment. Buff paper is supplied. Oral and blackboard work replaces much of the reading and writing in which the normally seeing children engage.

Transportation by public conveyance is paid for by the Board of Education when the class is beyond walking distance from the pupil's home.

Braille Classes

In the Braille class the blind child is taught to read and write by means of the Braille system, and to use the typewriter so that he may prepare his lessons and communicate with seeing people on a common basis. Appliances for the blind, such as the Braille slate, Braille typewriter and Taylor Type Slate for use in mathematical processes are also used. Talking books, radios, relief maps and other special equipment are supplied. Special forms of handwork are taught. In general every effort is made to reduce inequalities due to blindness in order that the blind child may work with seeing children in the regular grade classroom where he

recites many of his lessons. The teachers have received special training for this work.

School bus transportation is provided for blind children in the elementary schools.

Criteria for Placement

The New York City Department of Health with the assistance and guidance of an Ophthalmology Advisory Committee in 1950 established general medical criteria for the placement of children in sight conservation and Braille classes in the public schools. This committee was composed of many of the leading ophthalmologists in the city.

The general criteria for placement in sight conservation classes are:

a. Poor vision after correction, and normal mentality: Vision between 20/70 and 20/200 in both eyes; and any child who, in the opinion of the ophthalmologist, would benefit by such placement.
b. Amblyopia ex anopsia: A child with this condition, for whom occlusion is advised by the examiner, regardless of the degree of amblyopia, anisometropia, or age of the child.
c. High myopia: If the eye is diseased, or if the myopia is progressive; if in the opinion of the examiner the special facilities of the sight conservation class may help to prevent progression or complications.
d. Chronic eye conditions (visual field defects, uveitis, etc.) which, in the opinion of the examiner, would be benefited by such placement.

Placement in Braille classes is available to:

a. Children whose vision after correction in the better eye is worse than 20/200.
b. Those whose ocular condition, in the opinion of the examiner, would progress to legal blindness.
c. Those with field defects which, in the opinion of the examiner, warrant such placement.

The above criteria in many ways were less liberal than those in effect for many years prior to 1950; the old criteria had permitted placement of children with 20/50 visual acuity and of those with myopia of more than four diopters in sight conservation classes. Changes in scientific thinking were responsible for the new criteria, and dropping some of the old categories.

Periodic Vision Testing

Each school year the classroom teacher completes a visual acuity test for each child. It consists of a standard Snellen chart, either Symbol E, number, or alphabetical. Children whose visual acuity is 20/50 or worse upon testing by the teacher are referred by the public health nurse in the school for thorough eye examination. The children reported by the teacher as having 20/40 vision are retested by the public health nurse for accuracy. If the 20/40 vision is verified, further eye examination is recommended to parents by the public health nurse. Where the family is unable to afford private care, and is not already using a clinic facility, it may be referred to the Bureau for Handicapped Children of the New York City Department of Health which operates 23 eye clinics for complete ophthalmological evaluation of such children.

TABLE I

Probable Diagnosis Accounting for Placement*

(Total of 182 Children)

Diagnosis	Total No.	Sight Conservation	Braille
Refractive Errors	89		
Myopia	73	70	3
Myopic Astigmatism	14	14	..
Hyperopia	2	2	..
Diseases of Choroid and Retina	17		
Disseminated Choroiditis	1	..	1
Central	9	5	4
Hereditary Macular Degeneration	3	2	1
Macular Degeneration	2	2	..
Coloboma of Macula	1	..	1
Retinitis Pigmentosa	1	..	1
Congenital Nystagmus	16	15	1
Congenital Cataracts	12	7	5
Amblyopia for Occlusion	12	12	..
Optic Atrophy	7		
Primary	4	2	2
Secondary to Brain Tumor	2	..	2
Secondary to Craniostenosis	1	..	1
Albinism	7		
Complete	5	5	..
Partial	2	..	2
Glaucoma	4		
Congenital	3	2	1
Secondary	1	..	1
Retrolental Fibroplasia	4	..	4
Congenital Amblyopia	4	4	..
Esotropia	3	3	..
Microphthalmos	3	1	2
Retinoblastoma	3	1	2
Corneal Disease	3		
Leukoma	1	..	1
Nodular Dystrophy	1	1	..
Interstitial Keratitis	1	1	..
Detachment of Retina	2	1	1
Uveitis	1	..	1
Atrophic Globes	1	..	1
Hurler's Disease	1	..	1
Ophthalmia Neonatorum	1	1	..
Exotropia	1	1	..
No Diagnosis	3	2	1
Totals	194*	154	40

* 12 children (6 in sight conservation and 6 in Braille) had 2 diagnoses of such major importance that it was impossible to determine which was the primary cause of special class placement.

Recommendations for the admission to, renewal of, or withdrawal from sight conservation and Braille classes are made by the medical agency caring for the child and are subject to the medical review and approval of the Bureau for Handicapped Children, which includes review by the Bureau's consulting ophthalmologist.

Actual placement in or removal from the classes is effected by the Board of Education after this medical review and approval.

All children in these special classes are required to have an eye examination each year. In the case of a child with amblyopia ex anopsia, for whom occlusion is advised by the treatment agency, a professional review is required at least once in six weeks. If there is no improvement in a period of four months occlusion is terminated, and the child is removed from the sight conservation class.

Method of Study

The study made between November 1952 and January 1953 included 11 per cent of the children in sight conservation classes, and 21 per cent of those in Braille. In the elementary and junior high school group there were 64 males and 68 females; in the high school group there were 24 males and 26 females.

Visits were made to the classes by the consulting ophthalmologist or a supervising ophthalmologist of the Bureau for Handicapped Children of the Department of Health, together with the public health nursing consultant. These visits consisted of a review of the individual records of the children—that is, the pupil health card kept by the teacher, and the school health card kept by the School Health Service; discussion with the school principal, classroom teacher and public health nurse; and occasionally ophthalmological examination of an individual child when specially indicated. The data collected as a result of the visits were then correlated by the consulting ophthalmologist and the director of the Bureau for Handicapped Children with the information kept on each child in the central office of the Bureau.

Diagnosis of Cases

Probable causes for placement were refractive errors (45 per cent), most of which were myopia with or without astigmatism; diseases of the choroid and retina (9 per cent), most of which were central choroiditis; congenital nystagmus (5 per cent); congenital cataracts (7 per cent); and amblyopia for occlusion (6 per cent). Together these five diagnoses account for 75 per cent of all the probable causes. In the sight conservation group these same five diagnoses are the important ones, accounting for 83 per cent of all probable causes. In the Braille group the greatest probable causes for placement were diseases of choroid and retina (20 per cent); congenital cataracts (13 per cent); optic atrophy (12 per cent); retrolental fibroplasia (10 per cent). This distribution is similar to that reported by Kerby[4,5] for the United States (Table I).

Time Spent in Classes

The average length of time the children had spent in the sight conservation classes was 27 calendar months in elementary and junior high; 79 calendar months in high schools. The average for the Braille group in high schools was 96 calendar months.

TABLE II

Appropriateness of Special Class Placement

Type of Grade and Class	Totals	Appropriate	Not Appropriate	Unknown	Minimum Per Cent Inappropriately Placed
Sight Conservation					
Elementary and Jr. High School	115	58	43	14	37
High School	34	18	12	4	35
Braille					
Elementary and Jr. High School	17	17	..	..	0
High School	16	12	3	1	19
Totals	182	105	58	19	32

Appropriateness of Placement

The ultimate purpose of these special classes in any school system should be the education and protection therein of those children who require it for the necessary period. As a corollary, the classes should not have children who do not require it. The definition of "appropriateness of placement" used in this study is based upon the medical criteria accepted in 1950.

Of the entire group of 182 children included in the study, at the time the study was made, a minimum of 58 children (40 per cent) did not require this type of placement (Table II). Furthermore, of 58 children inappropriately placed, 20 never had required this type of placement at all, according to the data available from the survey. The percentage of children inappropriately placed was approximately 37 per cent in the sight conservation classes in elementary and junior high schools and high schools. On the other hand none of the Braille

TABLE III

Appropriate and Original Placement

Type of Appropriate Grade and Class	Totals	Original Placement in			
		Sight Conservation Class		Braille Class	
		Elementary and Jr. High School	High School	Elementary and Jr. High School	High School
Regular Class	54	42	12	..	..
Sight Conservation	3	..	..	..	3
Braille	1	1	..	..	..
Totals	58	43	12	0	3

Of the 14 additional children in sight conservation classes in elementary and junior high school, whose placement is uncertain, two might go to regular class and one to Braille.

As to the four additional children in high school sight conservation classes whose placement is uncertain, and the one additional child in high school Braille class, no decision could be made regarding proper placement without further information.

group in elementary and junior high was inappropriately placed, but 19 per cent in high school was inappropriately placed. In addition to the 58 children definitely known to be inappropriately placed, there were 19 about whom it was impossible to make a decision concerning placement because of inadequate medical information.

Of the 58 children, 54 in the sight conservation classes belonged in regular class, three in Braille class belonged in sight conservation, and one in sight conservation belonged in Braille (Table III) since he could not read large type and had low acuity. Thus, 57 of the 58 children were over-placed and one under-placed.

The medical agency for the entire group of 182 children studied is shown in Table IV. Most of the children in sight conservation classes were under the care of the Department of Health eye clinics, qualified ophthalmologists, and accredited hospitals. Most of those in Braille were under the care of quali-

TABLE IV

Analysis of Agency Caring for Visually Handicapped Children

Medical Agency	Total Group		In Sight Conservation		In Braille	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
Dept. of Health eye clinics	64	35.2	63	42.3	1	3.0
Qualified ophthalmologist	47	25.8	34	22.8	13	39.4
Accredited hospital	28	15.4	16	10.7	12	36.4
Optometrist	12	6.6	11	7.4	1	3.0
DHEC and optometrist	5	2.7	5	3.4	0	0.0
Non-accredited hospital	5	2.7	3	2.0	2	6.2
DHEC and qualified ophthalmologist	4	2.2	3	2.0	1	3.0
Partly qualified ophthalmologist	4	2.2	3	2.0	1	3.0
DHEC and non-accredited hospital	3	1.6	2	1.3	1	3.0
Accredited hospital and optometrist	2	1.1	2	1.3	0	0.0
Accredited hospital and qualified ophthalmologist	1	0.6	1	0.7	0	0.0
Qualified ophthalmologist and optometrist	1	0.6	1	0.7	0	0.0
Neurologist	1	0.6	0	0.0	1	3.0
Unknown	5	2.7	5	3.4	0	0.0
Totals	182	100.0	149	100.0	33	100.0

Definitions:

1. DHEC: Department of Health Eye Clinic.
2. Qualified Ophthalmologist: A physician who is a diplomate of the American Board of Ophthalmology, or who is an Associate Attending or better on the staff of a hospital approved by the AMA for residency training in ophthalmology.
3. Accredited Hospital: A hospital approved by the Council on Medical Education and Hospitals of the AMA for residency training in ophthalmology.
4. Partly Qualified Ophthalmologist: A physician who does not meet the qualifications of (2) above, but who has a rating of specialist in ophthalmology by the Workmen's Compensation Board and who has a rank lower than that of Associate Attending on the staff of a hospital approved by the AMA for residency training in ophthalmology.

fied ophthalmologists and accredited hospitals. In general it may be said that the qualified ophthalmologists and the accredited hospitals had the lowest percentages of children who were inappropriately placed.

Discussion

The above facts may be summarized as follows: (1) Thirty-two per cent of the children studied in sight conservation and Braille classes in public schools were inappropriately placed according to present medical standards, all but one child being overplaced; (2) the degree of inappropriate placement was greater in the sight conservation than in the Braille groups; (3) qualified ophthalmologists and hospitals with approved residencies in ophthalmology had the best "record" for placement.

Although the possibility of detection and prevention of the errors in placement exists in the present procedures, the probability of doing so is not very great. The possibility of incorrect routing of forms is great. To correct this it is suggested that the simplest and most effective procedure might be to arrange for a qualified ophthalmologist, a public health nurse and social worker to review all such children specially placed once a year in their classroom, together with the school physician, public health nurse and classroom teacher. In this way it should be relatively easy to make the correct decisions regarding appropriate placement. Furthermore, the special knowledge which the staff of the individual school may have regarding a child would be available and useful in deciding about placement. By this method, too, ophthalmological advice may be secured for those other children with visual defects who are in the regular classes. Conferences of all interested personnel might be helpful in obtaining additional assistance for the child in such areas as vocational guidance and social welfare. This plan was begun in New York City in the fall of 1953 and appears to be working well.

Over and above all this is the question of the medical value and need for special sight conservation classes in schools. The City of Oakland, California, has carried on a non-segregated program for education of partially seeing children for a period of years, and apparently it is working well.[6, 7]

It is evident that further professional education of the groups concerned—ophthalmologists, hospitals, optometrists and personnel working in the Department of Health eye clinics—is essential if progress is to be made in more appropriate placement. The Department of Health has already taken steps in this direction through the employment of five new supervising ophthalmologists whose sole function at present is to raise the level of service given in the eye clinics. Information regarding the medical criteria for special educational placement of visually handicapped children should be disseminated widely to ophthalmologists, optometrists and hospitals.

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6. Tudyman, Al, and Bertram, F. M. Oakland's Sight Conservation Program. *Sight-Saving Review*, 22:82–92. Spring 1952.
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South Carolina Report

The Sixteenth Annual Report of the South Carolina Department of Public Welfare for the year ended June 30, 1953 comments on the agency's active interest in the prevention of blindness and sight restoration. The state's statute requires that the Division for the Blind compile and maintain as comprehensive a register as possible not only of the blind but the near-blind.

Last year 4,086 persons were listed as blind; 524 in the prevention of blindness classification. Those included in the latter are individuals with vision 20/70 or less, having progressive eye conditions that warrant careful and continuous follow-up.

The Division for the Blind carries on all the planning and execution of services to these groups except subsistence grants. Listed as top priorities are the study of causes of blindness and its possible prevention; and ophthalmological care for the indigent blind and those in danger of blindness.

"The first consideration given to any applicant for services by the Division for the Blind," the report states, "is the possible correction of his visual defect, since the prevention of his problem is much more constructive than all attempts to render service after his disability has been allowed to develop. After clearance by his local county department of public welfare of his financial inability to purchase medical eye care for himself, each applicant is furnished necessary examination, follow-up treatment, surgery, and hospitalization as recommended by the examining ophthalmologist."

During this fiscal year a total of 1,383 examinations were made in the interest of prevention; 228 were for people on public assistance rolls. Glasses and appliances were provided for 485, while operations and treatment were carried out for 231. Analysis of the latter figure shows that such care helped to prevent further visual loss in 110 cases while restoration of vision occurred in 88. Treatment had not been completed for 16; only 17 had no improvement. Cataract extractions accounted for the largest number of surgical restoration procedures, as might be expected.

There were 34 enucleations, mostly among children. The division is well aware of the significance of these tragedies, since the majority happened during unsupervised play, particularly in group situations. The parents appeared quite unaware of the damage that could result from the use of BB guns and pointed or sharp objects.

On the dollars and cents side 17 cases out of the year's 176 were removed from the category of Aid to Needy Blind because vision was wholly or partially restored.

PROGRESS IN EDUCATION OF THE PARTIALLY SEEING IN OAKLAND

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A description of the program for education of partially seeing children in this city of nearly one-half million population appeared in the Summer Issue of 1952. In this second article Dr. Tudyman reports current developments, goes into detail on problems of administration and finance, and tells some of the day-to-day experiences of the partially seeing.

THE sight conservation program in the Oakland Public Schools continues to function successfully on a non-segregated basis. As the years go by it demonstrates the highly cooperative efforts of various departments within the system. Principals and teachers continue to appreciate the likenesses of the partially seeing to their classmates who have normal vision. Parents report their enthusiasm over the progress their partially seeing children make through the program which emphasizes likeness and de-emphasizes difference.

Above all, the visually handicapped pupils continue to benefit. For the most part the program is meeting their needs; in a number of cases those with visual acuity of less than 20/200 in the better eye after correction are making satisfactory adjustment. As a result of this success minimal visual acuity is no longer a criterion for enrollment; each case is individually evaluated.

Administrative Plan

The program is authorized by the superintendent of schools and the Oakland Board of Education[1] and financed for the most part through local district funds. About 25 per cent of the excess cost[2] is reimbursed by the state. The partially seeing pupil is considered physically handicapped.[3] He is enrolled in the regular class but is seen by the special teacher either individually or in a small group for a period of 30 minutes or one hour per day once or twice a week, depending on the special teacher's schedule, severity of the case and age of pupil. This session provides for remedial class[4] instruction. Special registers are maintained which indicate the pupil's name, grade, and school, and the exact number of minutes of instruction given.

Since remedial instruction involves a cost over and beyond that of the regular classroom, this is considered to be an excess cost. Each partially seeing pupil who is seen out of the regular classroom one or at the most two hours per week spends the other 28 or 29 hours in the regular classroom (based on a six-hour day or 30-hour teaching week).

Each hour of individual instruction

for physically handicapped pupils in remedial classes is interpreted by the California State Department of Education to equal one day of attendance. Obviously, this is only 16 to 20 per cent of the school week, and if a pupil is instructed only one hour per week the claimed excess cost of teacher's salary and supplies is far below the actual cost.

In other words, under the California School Code[5] a district individually instructing a partially seeing pupil in a remedial class on the basis of one hour per week can claim only one-fifth to one-sixth of $400 per year excess cost. This is between $64 and $80 per pupil. If a teacher has 20 to 30 such pupils maximum annual excess cost can be no more than $2,400, a total sum far less than the annual salary of the teacher, mileage allowances for travel, and required supplies and equipment. In spite of this, the school district authorities feel in view of the program's success that what is being done for the pupil, the regular classroom teacher, administrator and parents is far more important than the cost. If there is to be a change it is suggested that state reimbursement laws be made more flexible to encourage financial support for this type of program. The present education code in this instance and in this state is not entirely satisfactory nor equitable.

Instruction Schedule

The teachers in the program feel that in general one hour of individual instruction per week per pupil is sufficient. Extra time may be allowed for those who are educationally retarded. Extra time of the special teacher is utilized to help the partially seeing pupil work within a group. This may be done through the regular classroom teacher, or the pupil, or both. Before- or after-school conferences are held with the regular teachers who are given suggestions and instruction in methods as needed. Regular teachers help the special teacher to spot pupil deficiencies—both social and academic; methods of attack are worked out cooperatively.

Kindergarten children with severe visual handicaps who receive special guidance have very little difficulty in becoming part of the group. Toward the end of the kindergarten term when reading readiness becomes more closely related to reading activities such pupils are given even more careful guidance. The partially seeing child, as well as the normal one, will fall behind at a fast pace unless he "sees" the basic fundamentals of reading in the latter part of the kindergarten year as well as in the first and second grades. It is of prime concern to both special and regular teachers to emphasize these fundamentals to the young pupil. In the final analysis this represents a great saving of both money and hours of special instruction time in later years, notwithstanding the psychological effects such failure may have produced in the pupil.

In relation to personality affectations it may be stated in passing that it is often very difficult to separate the visual problem from the personality of the pupil. Herein lies an important function of the teacher of sight conservation. She is in a position (if she has had experience or training in child growth and development, especially with handicapped children) to observe and interpret to the regular classroom teacher. Many tics, bizarre behavior and personality deviations can be cor-

rected through guidance in cooperation with the regular teacher and parents.

Teachers of sight conservation in general are not to be considered "unique." Perhaps the only differentiating teaching characteristic is that such a teacher *must always* apply more carefully the techniques and tools which are employed in instructing *all* children. She also has the extra knowledge of the various educational and psychological aspects of the visually handicapped.

The special teacher can waste much time if she does not determine the following: (1) a well organized plan for each pupil; (2) efficient organization of her schedule; (3) duties which can be delegated to or shared with the regular classroom teacher, the parent, the administrator and clerical personnel. These functions are carefully fitted into a plan whereby the special teacher does her share and is not constantly putting herself on the "expert or autocrat pedestal." The *esprit de corps* of the regular classroom teacher, the parent and the school principal is a process, not an edict. Good public relations, willingness to work, and understanding of each other's roles lead to an ultimate cooperative relationship.

It is not unusual in this type of program for a special teacher to visit two to five schools in one day. This schedule depends on the type of district, number of schools, incidence of partially seeing pupils in any one school, severity of cases and grade levels. The special teacher has the same working hours as the regular teacher. Both report to and depart from schools at least 15 to 30 minutes before and after the pupils.

Time before school can be well spent in conferring with teacher or parents. Many times the "why's" in educational approaches are explained in terms of the pupil's visual defect. In addition to the doctor's medical diagnosis the special teacher supplies an educational diagnosis and prescription, to be further extended in terms of behavior and personality development when required.

Typical Approach

When school has started the special teacher waits five or 10 minutes before planning to see the visually handicapped pupil. This gives the child an opportunity to hear the announcements, and perhaps participate in class activities such as the pledge to the flag or morning singing. The time the child is to leave is pre-arranged with the regular teacher. Some special teachers use monitors; others depend on the pupil; still others rely on the regular teacher. The point is that there should be a mutual plan that is expeditious and efficient with no time wasted by teachers or pupil. Schedules should be arranged so that the pupil is taken from the classroom when it will least affect the "important" part of the day in the eyes of the regular teacher and the pupil.

Before a child is first seen for instruction the special teacher tentatively establishes the areas in which she can be of greatest help. The medical diagnosis of the visual deficiency is explained to the classroom teacher, especially in terms of educational procedure. The pupil's academic and social assets and liabilities are considered. An informal conference with the pupil is helpful. Questions pertaining to the visual defect are appropriate; observation of his appearance often gives

leads. Any signs of fatigue, restlessness, paling, or run-down condition are reported to the nurse and discussed with the parents. Older children are told how to conserve their vision.

Supplies, equipment, and textbooks are given to the pupil; extra quantities of special paper, pencils, and other material are left with the classroom teacher for issue (if necessary) between visits of the special teacher.

The most serious academic deficiencies are then attacked with the pupil. Continuity between work developed by the special teacher and that being followed in the classroom is not absolutely necessary to this process. It is believed to be prudent and practical, however, to correlate the work, particularly in areas of special concern to the pupil. If spelling is a big difficulty the regular class spelling words are utilized as, in the case of reading, are the enlarged books used in classroom.

Reading Techniques

When the child's interests in reading[6] have been determined enlarged books commensurate with his educational status are selected. Both silent and oral techniques are used. Oral reading follows silent reading in order to check on comprehension and ability. The teacher tries to use material that appeals to the pupil. Ordinarily, if the regular class texts are used the special teacher does not "get ahead" or use techniques that are different from those of the regular teacher without the latter's permission; otherwise either or both may be placed in untenable positions, to say nothing of the possible confusion imparted to the pupil. The special teacher often has to enlarge materials, and also selects enlarged texts from the school library or other sources. Such materials are enlarged by hand, by large-type typewriter, or some commercial process.

Writing Methods

Manuscript writing is not necessarily the only method taught by the special teacher. It appears best to follow the same instructional technique as that used for the partially seeing pupil's classmates. Adding cursive writing to manuscript is difficult for many children—both normal and visually handicapped. Manuscript writing is easier to do and has a greater meaning to the pupil at the second, third or fourth grade levels; because of this children often do not wish to relinquish it. For these reasons it is sometimes more difficult for visually handicapped children to learn a new way of writing. Also, cursive writing may involve greater eye fatigue. The special teacher helps in 10 or 15 minute periods for several weeks, depending on the degree and type of visual handicap. Excessive writing is discouraged; an oral approach in lieu of writing is suggested to the regular teacher when necessary.

Instruction in the touch system of typewriting is often started in the third or fourth grade with children who are capable of learning it. Obviously this method requires much less eye work than handwriting. Its use depends on the child, availability of the machines, opportunities for practicing, and need for it.

Arithmetic Problems

Arithmetic is taught by the method used in the regular classroom. Where regular teachers require a great deal of copying and reading it is suggested to them that the partially seeing have

more oral and blackboard work in the best seeing position. Arithmetical fact exercises are enlarged if work is to be copied, and only the writing of answers in large size is required. Some pupils who finish early are pleased to be asked or volunteer to write the problems in a large style for the partially seeing; they are guided by the special teacher as to format, size of letters or numbers and legibility.

Word problems may be enlarged or read to the pupil who then jots down the given data on sight-saving paper and in large writing. Homework of this nature of course requires help from brothers and sisters, or parents.

Spelling Instruction

This subject receives attention of the special teacher when the pupil is having difficulty, and when he is using eye-fatiguing techniques which need to be corrected. The spelling method subscribed to by the classroom teacher is followed by the special teacher and modified if necessary.

Use of the graded textbook where certain lessons are followed in sequence is one means of teaching spelling. In this case the spelling lists are enlarged, and may be mimeographed in black ink on non-glossy paper if a number of copies are needed. Only clear duplicated copies are used. Magnatype or its equivalent is satisfactory. Such spelling sheets can be bound in booklets. The regular and special teachers cooperate in this project, the former assuming the responsibility wherever possible.

The workbook method of teaching spelling requires considerably more reading and sometimes more copying. The limitations of the partially seeing for this kind of work should be explained to the classroom teacher. An exception may be made whereby the pupil uses the word orally in a sentence instead of writing it. Touch typing may also be substituted.

Another method is to require a pupil to copy the misspelled word correctly several times. Some special teachers work with the hardest words in the list, using eye-saving techniques. This sometimes helps the pupil to "get over the hump."

Conclusion

Modern methods of instruction are adapted to meet the individual needs of the partially seeing. What may function in one situation may have to be modified in another.

Teachers of partially seeing children are not tutors in the strictest sense of the word. However, they do correlate the subject matter and teaching techniques used with those of the regular classroom. This makes it possible to (1) make the work more meaningful to the pupil; (2) avoid confusing the pupil; and (3) command respect of the regular classroom teacher under whom the pupil is being instructed.

There is no one specific method of approaching any subject for all partially seeing. The objective is to instill good sight conservation habits so that each pupil will practice what he is taught by the special teacher.

The function of the special teacher does not terminate with the pupil. It is necessary for her to gain the respect of the classroom teacher, administrators and parents. Contacts with such personnel are imperative.

Another important function of the special teacher relates to guidance in the academic and social life of the

pupil. Success in school is measured in a number of ways but mainly through academic and social adequacies. Psychological leadership in conjunction with existing guidance services is most desirable when a pupil needs such services. The pupil must learn that the visual defect may be a handicap but that it can be balanced with other developed assets.

It is not possible in this type of report to include all details. It is hoped that the foregoing will give classroom teachers and special teachers a better insight into methods and techniques that may be used with the partially seeing. The special teacher has the same goal as the regular teacher: *to help the pupil.*

REFERENCES

1. State of California, Education Code, Section 9601. Subject to the provisions of this article the governing board of any school district may make such special provisions as in its judgment may be necessary for the education of physically handicapped minors. "Physically handicapped minor," as used in this article, means a physically defective or handicapped person under the age of 21 years who is in need of education. 1953.
2. State of California, Education Code, Section 9617. The Superintendent of Public Instruction shall determine the amount of the excess expense incurred by each school district for the education of physically handicapped pupils. "Excess expense" as employed in this section includes the total current expenses of education incurred for remedial classes and for individual instruction of physically handicapped children in the home or in an institution, plus the excess amount of the current expenses incurred for all other physically handicapped pupils instructed in special schools, in special classes, or in regular classes over the expense for an equal number of units of average daily attendance of pupils not classified as physically handicapped or mentally retarded pupils. "Remedial classes" as herein employed includes special classes providing remedial instruction for physically handicapped pupils who are excused in small numbers for a portion of a class period from regular classes, without appreciable reduction in the costs of the regular classes. 1953.
3. State of California, Education Code, Section 9602. Any minor who, by reason of a physical impairment, can not receive the full benefit of ordinary education facilities, shall be considered a physically handicapped individual for the purposes of this chapter. . . . 1953.
4. California State Department of Education. Handbook on Attendance Accounting in California Public Schools, Vol. XXI, No. 7, June, 1952. p. 62. Physically handicapped minors may be instructed in regular day classes, in remedial classes, may be given individual instruction in hospitals, sanatoriums, preventoriums, or in the home or at the bedside in institutions, or may attend special classes. They may also be instructed by any other means approved by the State Department of Education.
5. State of California, Education Code, Section 7101.1. The Superintendent of Public Instruction shall allow to each school district an amount equal to the excess current expense of education to such district of educating physically handicapped minor pupils but not in excess of four hundred dollars ($400) for each unit of average daily attendance of physically handicapped minor pupils in the district during the next preceding fiscal year (1953).
6. More information on reading may be found in "A Partially Seeing Child Learns to Read," by Florence Christner, *The Sight-Saving Review*, Spring 1954. pp. 30–36.

AROUND THE WORLD

AUSTRALIA

Results of Ophthalmic Survey—During July, August and September of 1954 an ophthalmic survey was carried out in the Kimberley District of Western Australia by Dr. Ida Mann, of Perth, with the assistance of the Flying Doctor Service (Victorian Section) and the Public Health Department of Western Australia. The research team visited a number of cattle and sheep stations along the Ord and Fitzroy rivers, religious missions, hospitals, government and research stations, various camps and small holdings, four townships, and a leprosarium. A total of 2,866 persons were examined altogether. According to Dr. Mann's preliminary report, which appears in the latest *Transactions of the Ophthalmological Society of Australia* (Vol. XIII), 149 cases of binocular blindness and 111 of monocular blindness were discovered.

Trachoma was found to be by far the most pressing eye problem, representing 62 per cent of all eye disease in the group examined. Alone it accounts for 64 per cent of the binocular blindness in the group, and for another nine per cent in conjunction with cataract, leprosy and injury. It was also responsible for 15 per cent of monocular blindness.

The greatest single cause of monocular blindness was injury, 56 per cent of the cases. Strabismus was given as the cause of 16 per cent.

Cataract was not common, and when it did occur was almost always a nuclear sclerosis. Dr. Mann felt that the contrast between the low incidence of this disease in Western Australia and the high incidence in Asia might be related to the high protein diet of the aboriginal in contrast to the rice-eating and grain-eating peoples. Dr. Mann also noted that glaucoma appears to be very rare in this area, but since very few fundus examinations were made, chronic simple glaucoma was not included and only the subacute or absolute cases were listed.

Dr. Mann emphasized the great help of the Flying Doctor Service in the project.

EGYPT

Centers Fight Conjunctivitis—In Egypt, where three-fourths of the population is composed of farmers living in collective villages, the government has set up a program of "social centers" to provide all the services required by the villages. There are about 136 of these centers distributed in all the regional districts of the country, each serving about 10,000 inhabitants. Among other health services, some of the centers carried out an experiment last year for combating conjunctivitis by mass treatment of the population with sulphate composites. This experiment proved to be so successful that the government has now decided to extend the same treatment to every village in the country.

FRANCE

Glaucoma Education Urged — Dr. P. Bailliart of Paris, Honorary President of the International Association for the Prevention of Blindness, recently stressed the importance of a well-informed public in helping to reduce the incidence of blindness from glaucoma.

Writing in the *Journal D'Ophthalmologie Sociale*, Dr. Bailliart pointed out that little progress was made against tuberculosis, syphilis or cancer until the general public was taught the basic facts about them, and urged similar public education about the facts of glaucoma and its prevention. This is essential, he said, because the early symptoms are so seemingly innocuous and the progress of the disease so insidious that in many cases an ophthalmologist is not consulted until too late. It is therefore of utmost importance that general physicians, social workers and the lay public should be given as much information as possible about the basic characteristics of the disease and made thoroughly aware of the significance of its early symptoms.

Noting that the battle against blindness from glaucoma was first launched in the United States, Dr. Bailliart paid tribute to the men and women who are directing this work here and urged "men of good will" all over the world to pursue the same goal with vigor.

GOLD COAST

"River Blindness" Control—In its annual report for 1953 the British Empire Society for the Blind noted that more than 40,000 people in the northern territories of Africa's Gold Coast are blind. About 60 per cent of these cases are due to onchocerciasis, or "river blindness"—a disease caused by an intraocular parasite which infests the rivers of Central and West Africa and some parts of Central America. It has been estimated that 19 million people in Africa and nearly a million in Central America are victims of this disease.

The parasite, a threadlike worm called *Onchocerca volvulus*, is transmitted to humans by small black lymph-sucking flies. For half a century scientists tried unsuccessfully to fight this disease, searching for some means of exterminating the parasites or the vectors which transmit them. In the latter approach the principal stumbling block was the fact that no one could learn how the larva and pupa stages of the flies were spent. In 1950, however, it was discovered that the host is a small fresh-water river crab. By dosing the river haunts of these crabs with DDT Gold Coast authorities have succeeded in wiping out the carrier flies in four previously infested districts. Others are now being similarly treated with DDT in the hope of eradicating this problem from the colony completely.

LEBANON

Vision Screening in Middle East—As an outgrowth of a postgraduate course in public health nursing inaugurated three years ago at the American University of Beirut, Lebanon, vision screening of school children has been introduced in eight countries which previously had no such tests. These countries include Syria, Jordan, Iran, Iraq, Egypt, Liberia and Palestine, in addition to Lebanon.

The course was set up as part of a regional training program made possible by a grant to the university by

the Technical Cooperation Administration (Foreign Operations Administration), with the object of training people in or near their home countries and giving them practical training as inexpensively as possible. It is described in the October, 1954, issue of *Nursing Outlook* by Margaret E. Willhoit, a nurse officer of the U.S. Public Health Service, who organized the course and administered it from October of 1951 through September, 1954.

The students in this course, all graduate nurses with at least one year's experience, take a program consisting of nine months of classes and two months of field practice. In addition they spend two half-days each week during the second semester assisting in school health programs, prenatal clinics, well-baby clinics, and home visiting.

Student nurse participation in school health programs is limited to schools in which some type of medical service is available. No public health service existed in the schools until recently, and until the regional training program at the University of Beirut was set up, vision screening was unheard of. Now this screening is being done in the "field practice" schools by the student nurses, who later try to extend the service in their own countries when they return.

Since its inauguration three years ago, 48 nurses from the eight countries mentioned have successfully completed the course.

RHODESIA

Optic Atrophy Studied—Many cases of optic atrophy are found in Southern Rhodesia and other parts of Africa, with young male adults making up the largest group of those affected. In a high percentage of these cases no clear cause can be found. While many investigators have attributed the condition to a deficiency of vitamin B some others disagree with this theory, even though failing to discover any other cause. In an effort to shed further light on the problem Dr. Charles Sparrow and Dr. Michael Gelfand, of the Salisbury Native Hospital in Southern Rhodesia, recently carried out a study. Their conclusions are reported in the July 31, 1954, issue of the *British Medical Journal.*

Fifty cases of optic atrophy in which the etiology was not immediately obvious were taken consecutively from the native ophthalmic outpatient department at the Salisbury Hospital. The patients were predominantly male and included laborers from various parts of British Central Africa and the neighboring Portuguese East Africa, although the largest number came from the industrial or farm laboring class of the Salisbury area.

The types of optic atrophy were classified according to ophthalmoscopic appearance based on the six descriptive categories of Duke-Elder. Each patient was first examined in the ophthalmic outpatient department and then admitted to the medical ward for a history, complete physical examination, and extensive tests. Thirty-two of the 50 cases were found to be of the post-neuritic atrophy type and 12 of the optic atrophy type, while vascular and temporal atrophy made up the balance.

On the basis of this study Drs. Sparrow and Gelfand support the view that optic atrophy in Rhodesia is not the result of vitamin B deficiency or any other nutritional disorder. In only four cases were they able to find a

definite cause for the condition, but they feel that all evidence points toward syphilis as the probable cause.

UNION OF SOUTH AFRICA

Blindness in the Bantu—The incidence of blindness among the Bantu tribes of South Africa is very high, a fact which has in the past been generally attributed to malnutrition. Four researchers from the South African Institute for Medical Research in Johannesburg have now challenged this theory on the basis of a study they conducted among the Bavenda and Shangaan tribes. Their report, "Blindness in the Bantu: A Survey of External Eye Disease and Malnutrition in the North Eastern Transvaal," was published recently in the *South African Medical Journal.*

It was found that trachoma and leukoma were by far the most important causes of eye disease, leading to various corneal lesions and in many cases to blindness. Trachoma alone was responsible for a blindness rate of 781 per 100,000 as against a rate of 91 per 100,000 for Europeans in South Africa. In a previous survey a blindness rate of 1,190 per 100,000 was found from leukoma alone, with bacterial conjunctivitis the principal cause.

As proof that malnutrition plays little or no part in this high rate of disease the authors point to the fact that the Shangaan tribe, who were better off nutritionally than the Bavendas, were found to have seven times as many cases of trachoma. The incidence of leukoma was also higher in the Shangaan tribe, indicating that trachoma is a factor in the pathogenesis of those leukomata which were infectious in origin.

In the belief that flies are responsible for the spread of ophthalmia and trachoma among these tribes, public health authorities are trying to solve the problem through widespread use of insecticides. This preventive measure, in conjunction with the treatment of early cases with modern antibiotics, is expected to bring about a reduction of ocular infection in the Bantu.

Stamp Drive for Field Units—The South African Council for the Blind, which is celebrating its silver jubilee this year, has announced plans for a giant stamp-selling campaign to help expand its work. According to *The Optician* of September 3, 1954, at least 4,000,000 stamps are being printed for this purpose. Chief among the goals of the drive is the establishment of a number of mobile ophthalmic field units.

At the present time one such unit is in operation and is helping to save the sight of hundreds of people throughout the Union every year. The Council states that the services of a single unit of this type are inadequate for a country as vast as the Union of South Africa, however, and expresses the hope that its forthcoming stamp campaign will yield enough funds to provide one of these units for every province in the country.

BENGAL CELEBRATES

The Association for the Prevention of Blindness of Bengal, India, will celebrate its silver jubilee in March, 1955. The National Society for the Prevention of Blindness has extended its congratulations to the Bengal group, with warmest wishes for continued success in the future.

CURRENT ARTICLES

Interviewing Versus Diary Keeping in Eliciting Information in a Morbidity Survey. G. I. Allen, L. Breslow, A. Weissman and H. Nisselson. *American Journal of Public Health.* Vol. 44. p. 919. July 1954.

One of the most difficult problems in the field of public health is to learn the extent of non-fatal illness. This paper reports a comparison in San Jose, California, of two methods of determining illness rates. In each sample there were about 400 comparable households which included 1,100 persons. Those in the interview group were asked about illness on the previous day and about illness during the past month. Those in the diary group were asked to keep a record for one month on all illnesses; usually these diaries were maintained by the housewife.

Altogether each of the two procedures produced records of 3,200 person-months. As might be expected, the diary method revealed more episodes of illness than the interview method. For diseases of the eyes there were 0.3 episodes of medically attended illness per 100 person-months recorded in the diaries, and 0.2 in the interviews. For diseases of the eyes receiving no medical attention, there were 0.5 episodes per 100 person-months shown by the diaries and 0.2 revealed by interviews. These data compare with 14.5 episodes of all medically attended illnesses per 100 person-months recorded in the diaries and 11.9 in the interviews; and with 54.4 episodes per 100 person-months of all illnesses not medically attended in diaries and 23.7 in interviews.

Ophthalmological Problems Among Railroad Employees. K. L. Roper. *Industrial Medicine and Surgery.* Vol. 23. p. 50. February 1954.

Attention is called to approaching the problem of job analysis from a visual skill standpoint to aid in the selection and placement of personnel in industry. The adoption of newer visual testing techniques is urged, including appraisal of both near and distant vision with and without glasses for each eye separately, binocular acuity, muscle balance, color discrimination, and depth perception. Increased production and efficiency and reduction of accidents have been reported by industries which have adopted a system of visual screening for job placement, after proper glasses were furnished or corrective procedures instituted.

For protecting railroad workers against glare the ideal filter or sunglass should not alter color perception. Such a glass will have a fairly flat transmission curve so far as the visible spectrum is concerned, and a density quite acceptable in high brightness levels. Attention is called to the necessity of removing these glasses when light levels are decreased.

Prophylactic chemotherapy measures are stressed as having prime importance in handling eye injuries.

It is pointed out that glaucoma is as frequent among railroad workers as in any other group of individuals. Since the condition causes one-eighth of all blindness, every railway surgeon must be alert to the detection of early chronic glaucoma.

Some Issues in School Vision Screening. H. M. Leverett. *American Journal of Optometry and Archives of the American Academy of Optometry.* Vol. 31. p. 87. February 1954.

Of the 30 million American school children between the ages of five and 17 years, it is estimated that one in four or approximately seven and a half million need eye care. Apparently many of these children have not received the eye care they need. Ideally, to be certain that all children who need eye attention receive it, all children should be given periodic, complete eye examinations by an ophthalmic practitioner. Since this is not feasible, visual screening procedures in the schools are undertaken, and those children who fail the tests are referred for a complete examination. This kind of program is not infallible and sometimes results in errors of under-referral or over-referral. Efforts to decrease under-referrals by raising standards for passing tests and by introducing additional tests result in an increase of over-referrals. The reverse situation also applied: efforts to reduce the error of over-referrals tend to increase the error of under-referrals.

Important characteristics of a good school visual screening program include the following: considering the fullness of the curriculum, the visual screening procedure should consume a minimum of school time; the screening program should be based on procedures authorized and supported by the ophthalmic professions; provision should be made for special needs in the education of visually handicapped children. There is a need for applied research on the effectiveness, practicability, and efficiency of various school vision screening procedures. Such studies should be undertaken through the cooperative efforts of the schools and ophthalmic practitioners.

Management of Acute Ocular Lime Burns. W. Z. Rundles, Jr., and J. R. Quinn. *American Journal of Ophthalmology.* Vol. 37. p. 209. February 1954.

The authors suggest the following treatment of ocular lime burns:

The eye should be immediately and thoroughly irrigated with water at the scene of the accident. Neutralization with weak acids should not be attempted. Local applications of cortisone should be given every second hour while the patient is awake; dosage should be reduced as healing progresses. Sulfonamide or antibiotics should also be administered every two hours, and the dosage reduced as is the cortisone. Atropine (one per cent) should be given three times daily; 10 per cent aqueous neosynephrine can be used concurrently if pupillary dilatation is poor. The involved eye should be padded, with vaseline or similar lubricant applied to the under surface until all corneal staining has ceased. Until the eye is white, moist heat should be applied three or four times daily. Local anesthetics can be used to ease severe pain, but should be discouraged. Codeine and salicylates are

prescribed to control pain, and barbiturates to promote rest.

Four clinical cases given this treatment are reported. The local use of cortisone apparently promotes more rapid clearing of the stromal infiltration and opacification. The author believe that it decreases inflammatory reaction to the alkali faster than either hydrosulphosol or ammonium tartrate. No retardation of epithelial regeneration was noted.

In animal experiments it was found that eyes with lime burns treated with cortisone healed much more rapidly than eyes given no cortisone but otherwise receiving identical treatment.

Bacteriology of the Eye. I. Normal Flora. L. Cason and C. H. Winkler, Jr. II. Role of Gram-Negative Bacilli in Infections Following Cataract Extraction. C. H. Winkler, Jr., and L. Cason. *A.M.A. Archives of Ophthalmology.* Vol. 51. p. 196 and 200. February 1954.

A study was made of bacterial organisms grown from eye cultures of 1,600 patients admitted to the hospital for cataract extractions. These patients showed no evidence of any infectious process in either eye. *M. pyogenes var. albus* and diphtheroids were found in the cultures more frequently than any other organisms. Certain Gram-negative enteric bacilli occurred with greater frequency than has been reported up to now.

In a series of 1,653 cataract extractions, 11 patients had postoperative infections. A report of the bacteria recovered from these patients is given and an attempt is made to relate the origin of infection to the preoperative bacterial flora or to an exogenous source of infection. In four of the 11 cases, postoperative cultures of the etiological agents were correlated with the preoperative flora. In seven cases of panophthalmitis the source of infection was apparently exogenous. In 10 of the 11 cases Gram-negative enteric bacilli caused the postoperative infection. *A. aerogenes*, *Ps. aeruginosa*, *P. vulgaris*, and *M. pyogenes var. aureus* were recovered in culture. The role of Gram-negative bacilli as "opportunists" in postoperative infection and the value of preoperative cultures in discovering their presence are discussed.

Arteriosclerotic Diseases of the Retina. K. E. P. Olmsted. *New York State Journal of Medicine.* Vol. 54. p. 784. March 15, 1954.

Of six types of arteriosclerosis the two common forms found in the retina are intimal atherosclerosis and arteriolar sclerosis.

Intimal atherosclerosis, considered to be of age and hereditary origin, is a plaque-like enlargement of the intima (the innermost of the three coats of a blood vessel), affecting true arteries. In the eye the central artery and early portion of the branches are involved. The disease has been shown to be a disturbance in lipid metabolism. Lipid infiltrates are also found in such nonvascular tissues as the arcus of the cornea and deposits in the sclera. The lesions and diagnostic problems are described.

Arteriolar sclerosis, considered to be a result of hypertension, is a disease of the arterioles involving the entire retinal arterial vasculature. The disease depends on a humoral factor liberated by the ischemic kidney, whose primary effect is increased arterial tone; organic changes in the small arteries and

arterioles are secondary to the purely functional disturbances. The vascular changes are especially prominent in the kidney, brain and retina, and inconspicuous in skeletal muscle, while the entire arterial system participates uniformly in the functional increase in tone. This implies that a local factor contributes to the pathogenic mechanism. The course of the disease and its pathological lesions are described.

It is important to distinguish between these conditions, but this is difficult without physical findings or a clinical history. The differential diagnosis is aided when age distribution of the two diseases is taken into account, since atherosclerotic hypertension occurs most frequently after 60 years of age and is uncommon in persons under 50. Arteriolar sclerosis usually begins with essential hypertension before the age of 50, with well developed arteriolar hyaline changes before age 60. Ophthalmoscopic differential diagnosis is discussed.

The Role of Vitreous Detachment in Aphakic and Malignant Glaucoma. R. N. Shaffer. *Transactions of the American Academy of Ophthalmology and Otolaryngology.* Vol. 58. p. 217. March–April 1954.

In almost all eyes which have had intraocular surgery and in many glaucomatous eyes vitreous detachment is present. Synechias producing pupillary block can form between the iris and vitreous face in aphakic eyes and eyes with subluxated lenses. Aqueous may collect in the posterior chamber, causing anterior detachment of the vitreous, or the aqueous may seep behind a posteriorly detached vitreous, pushing it forward and producing glaucoma. The anterior chamber may be collapsed or filled with vitreous. Iridectomy will usually cure such glaucoma.

A similar syndrome may be seen after lens extraction to relieve malignant glaucoma, when the aqueous runs posteriorly, forcing the detached vitreous and iris forward and continuing the malignant course. This type of glaucoma can be relieved only by breaking the pupillary block. Iridectomy and lens extraction will be helpful if the aqueous is collecting anteriorly; however, if the aqueous collects behind the detached vitreous the only chance of cure is actual incision through the detached vitreous to break the postero-anterior pupillary block.

A Study of the Role of Toxoplasmosis in Adult Chorioretinitis. A. C. Woods, L. Jacobs, R. M. Wood, and M. K. Cook. *Transactions of the American Academy of Ophthalmology and Otolaryngology.* Vol. 58. p. 172. March–April 1954.

Toxoplasma may be incriminated as the etiologic agent in a considerable percentage of granulomatous uveitis cases. Of 201 cases studied Toxoplasma was indicated to be the etiologic factor in 58, of which 17 were probably congenital and 41 acquired in adulthood.

A dye test study was conducted of serums of a large number of nongranulomatous and granulomatous uveitis patients and a group of nonuveitis control subjects. In the nonuveitis control group and the nongranulomatous uveitis group, where there is no thought of Toxoplasma infection being related to the ocular disease about 25 per cent positive dye tests were found. The granulomatous uveitis group, in which any possible Toxoplasma ocular involvement would fall, revealed 45 per

cent positive dye tests, a statistically significant higher incidence. In the latter group the positive dye tests were generally higher than in the other group, and all cases of rising titer on repetition of the tests were found in the granulomatous uveitis patients. Among the patients with granulomatous uveitis the greatest number of positive tests occurred in cases of disease of "undetermined etiology." The incidence of positive dye tests was 56 per cent in this group. Where the uveitis had been attributed to recognized conventional etiologies the incidence of positive tests was around 25 per cent, essentially the same as the control and nongranulomatous uveitis group.

The authors conclude that adult acquired ocular toxoplasmosis is an actual clinical entity and that the condition is not confined to the congenital disease found in children; Toxoplasma infection is the probable etiologic factor in approximately 25 per cent of adult granulomatous uveal disease. The diagnosis of a Toxoplasma etiology can be made only by careful consideration of the clinical ocular picture, evaluation of the results of a medical survey and serologic and cutaneous toxoplasma tests. There appears to be a 20 to 25 per cent margin of error in evaluating a single positive dye test as an index of Toxoplasma etiology.

Hydrogen Sulfide Eye Inflammation—Treatment with Cortisone. H.T. Nyman. *Industrial Medicine and Surgery.* Vol. 23. p. 161. April 1954.

In chemical industry, particularly the artificial fiber industry, both acute and chronic hydrogen sulfide and carbon disulfide poisoning occur. Acute conjunctivitis is the most common effect. Some patients develop keratitis after the conjunctivitis has persisted for a few days, but occasionally the two conditions occur simultaneously. The corneal epithelium is often ruptured and it is not unusual for the broken surface to cover practically the entire cornea. The patient at this stage is almost completely blind, in intense pain, and unable to open his eyes.

Treatment with zinc and atropine was found to be unsatisfactory. Scopolamine was effective in curing slight conjunctivitis in two to three days, severe cases in one to two weeks; slight keratitis was cured with this drug in one to one-and-a-half weeks, severe cases in two to eight weeks.

Since the author attempted treatment with cortisone in December 1951, he has used only cortisone acetate and physiological saline solution in 237 patients. No case of conjunctivitis developed later into keratitis. The corneas of all keratitis patients have remained intact, and severe painful conditions have not developed at all. No patient has remained away from work for more than five days; the average time lost has been two days. Cortisone treatment of chemical eye injuries from sulfuric acid, lye, or viscose has been successful in 15 patients. The average loss of working time for such patients formerly averaged two to three weeks, while only one of the patients treated with cortisone lost more than three days.

School Lighting and Posture. W. Allphin. *Illuminating Engineering.* Vol. 49. p. 192. April 1954.

This investigation was made at the Bowditch School, Salem, Massachusetts, a building which has one section 86 years old and another 45 years old,

both undergoing a gradual program of modernization. At the time of the study some rooms had movable desks of light color and others had dark stationary furniture; all walls were painted in light colors; and artificial lighting from enclosed globes provided low illumination levels.

Unposed photographs were taken of children in grades one through eight during writing periods; 19 representative pictures are included in the paper, showing the writing postures assumed by the children. No relation could be shown between posture and illumination levels, direction of light, or glare. Tilting and twisting are apparently caused by bringing the eyes close to the work. The closeness, when it occurs, may be related to the following factors: the desk may be too high; the pen or pencil may be held so close to the point that the head must be tilted to see under the hand; a young child who is very intent upon his writing may get closer and closer to his work, "simply because there is no reason not to."

Routine Tonometry as Part of the Physical Examination. R. W. Zeller and L. Christensen. *Journal of the American Medical Association.* Vol. 154. p. 1343. April 17, 1954.

A considerable percentage of the blind and near-blind patients examined at the outpatient clinic of the University of Oregon Medical School had passed unrecognized through practitioners' offices, clinics, and hospitals while their disease was in an active phase; this was particularly true of chronic glaucoma. Approximately two per cent of persons over 40 years of age, an estimated one million persons, in the United States have chronic glaucoma and do not know it. The most common sign of glaucoma, increased ocular tension, can be detected quickly in the practitioner's office with any of several types of tonometer.

During the period from July 1, 1951, to June 30, 1952, a study was conducted on interns and patients, to determine whether interns without a special interest in ophthalmology could be trained to determine ocular tensions with reasonable accuracy, using a standard Schiøtz tonometer. The 12 interns reported a total of 1,000 determinations, 60 of them over 25 mm. Hg. Seventeen of the 60 were verified. None of the reported normals was found to be abnormally high on spot checks. The 17 patients with confirmed high tensions were referred to the eye clinic for further study and treatment. It was the impression of the ophthalmology faculty that any intern who had taken more than just a few tonometric measurements was able to perform the test accurately. Determination of ocular tension as part of the routine physical examination offers the best means of discovering glaucoma in the two per cent of the population over 40 years of age who have the disease. The concept of what constitutes a complete physical examination must include tonometry before the one million undiagnosed glaucoma patients can be detected.

Pyocyaneus Ulcer. Clinical Report and Experimental Investigation. R. K. Williams, M. E. Hench, and D. Guerry III. *American Journal of Ophthalmology.* Vol. 37. p. 538. April 1954.

Pseudomonas aeruginosa (*Bacillus pyocyaneus*) causes a severe, rapidly spreading, dead-white corneal ulcer, usually one to three days after a minor

abrasion of the cornea. Penicillin, the sulfonamides, and streptomycin have been tried in treating the condition, and although the eyes were saved, the visual results were not very good. Better results have been obtained experimentally with the polymyxins.

A case of pyocyaneus ulcer was treated by large doses of streptomycin subconjunctivally, intramuscularly and topically, and aureomycin orally. Vision of 20/20–1 was retained. When the highly virulent organism obtained from this patient was cultured, it was found that polymyxin B was more effective in controlling its growth than polymyxin E or dihydrostreptomycin.

After an 18-hour incubation period ulcers of the corneas of rabbits infected with pyocyaneus were treated with polymyxin B or E in daily doses of 25,000 units given subconjunctivally. Response to both polymyxins was equally good when treatment was started early; healing took place with only faint scarring. It is suggested that 50,000 units of polymyxin B by conjunctival injections daily, and hourly instillation of polymyxin solution may be used in treating pyocyaneus ulcers of human corneas.

The Pullman Study—A Visual Survey of Pullman School Children. F. A. Young, R. J. Beattie, F. J. Newby, and M. T. Swindal. *American Journal of Optometry* and *Archives of the American Academy of Optometry.* Vol. 31. p. 111 and 192. March and April 1954.

An attempt is made to characterize the development of myopia and to delineate the role played by various factors which have been suggested by other investigators. An optometric survey was made of 651 school children between five and 17 years of age.

Most school surveys show that the incidence of myopia is between five and 10 per cent at seven years of age, that this increases to between 23 and 51 per cent at 21 years of age, and that the proportion of hypermetropes decreases with age. Rural children tend to have a lower incidence of myopia than urban children. Children who do more near work or reading tend to have a higher incidence of myopia, and in England, Jewish children were found to have a greater frequency of myopia than non-Jewish children. The incidence is greater in girls than boys at certain ages.

In this study a comparison was made between children who do a considerable amount of near work and those who do only a small amount. More than half of the children tested had parents who taught at the college in Pullman.

The usual increase in incidence of myopia with increase in age was found, but with an earlier onset—about 9–10 years in girls and 11–12 years in boys. The percentage of children showing a minus refractive error was about double that found in other studies. The distribution of refraction was skewed toward the hyperopic side up to age nine or 10, was symmetrical at that age, and then became increasingly skewed toward the myopic side with increasing age. High hyperopia decreased in frequency with increasing age as sharply as the frequency of myopia increased. For both girls and boys, hyperopia increased from age five to six and then decreased. Myopia greater than 1.0 diopter was found more frequently among boys than girls in all ages between five and 14 except in the nine to 10 year age group. Girls

had a greater incidence of myopia than boys.

The following visual tests did not vary significantly with age: dynamic retinoscopy, recovery base-out at far and near, lateral and vertical phoria at far and near, recovery base-in at far, break and recovery base-in at near, and blur base-out at near. All other tests showed a highly significant variation with age.

The Relationship of Retrobulbar Neuritis to Multiple Sclerosis. R. G. Taub and C. W. Rucker. *American Journal of Ophthalmology.* Vol. 37. p. 494. April 1954.

Among 87 patients who had an initial attack of acute retrobulbar neuritis, 28 (32.2 per cent) developed evidence of multiple sclerosis within 10 to 15 years. All but two of those developing multiple sclerosis were between 20 and 44 years old at the time of the initial bout of neuritis.

The data indicate that in about half the cases in the 20 to 44 year group signs of multiple sclerosis other than retrobulbar neuritis may be expected to develop within a period of 15 years. When the neuritis occurs earlier than age 20 the chance of multiple sclerosis appearing is less likely, and when it occurs after age 44 the chance of developing multiple sclerosis is remote.

Criteria of Cure in Trachoma, with Special Reference to Provocative Tests. P. Thygeson. *Revue Internationale du Trachome.* Vol. 30. p. 450. 1953.

One hundred and thirty trachoma patients were treated orally with sulfanilamide or sulfadiazine, or topically with terramycin ointment. A valuable indication of healing in these patients was the disappearance of corneal lesions, including subepithelial infiltrates and punctate epithelial keratitis.

After disappearance of the trachoma virus the absorption of trachomatous conjunctival infiltrates and particularly of the follicular hypertrophy is a slow process. It is advocated, therefore, that treatment be stopped immediately after total corneal clearing. In the cases mentioned above, treated according to this principle, no recurrences were observed.

In four of seven cases where trachomatous activity was questionable cortisone reactivated the virus. Clinical signs of activity followed reappearance of inclusion bodies in three of these four cases. The possible value of cortisone to distinguish between latency and cure in trachoma should be explored further.

It is noteworthy that the value of a reliable provocative test in trachoma would not be limited to diagnosis: since highly active trachoma is much more responsive to sulfonamide and antibiotic therapy than mildly active trachoma, activation should materially shorten the time required for treatment.

Heredity and the Eye. C. Berens. *Eugenics Quarterly.* Vol. 1, p. 16. June 1954.

There are more than 100 types of hereditary eye conditions, ranging from minor defects to complete blindness. It is not the disease nor the actual blindness which is inherited but the tendency to structural deviation from the normal. These deviations may be latent in tissue of normal appearance and function, and make their appearance only after many years. In diagnosing such conditions

the physician must differentiate between abnormalities due to maldevelopment during the fetal and embryonic stages and those due to environment, such as syphilitic infection in the mother.

Knowledge of heredity in man is based principally on records of occurrence of abnormalities in families over several generations. According to such records almost every part of the eye, including the lid, appears subject to hereditary abnormalities or diseases. An outstanding fact is that the modes of inheritance vary for individual diseases. In the case of glaucoma, it has been noted that records of familial occurrence give strong indication of heredity as a cause, and also that within the same family this disease tends to have the same onset and run the same course.

Metastatic Carcinoma of the Choroid. O. Sitchevska. *American Journal of Ophthalmology.* Vol. 37, p. 873. June 1954.

Although metastatic carcinoma of the choroid is extremely rare, it is possible that many cases are being overlooked because the patient is too ill from general metastasis to notice the impairment of vision and dies without an ophthalmoscopic examination. Now that intensive radiation therapy is being used with increasing success to prolong the patient's life, it seems likely that more and more cases will be discovered.

The length of time between diagnosis of the primary tumor and appearance of the metastatic tumor in the eye varies between several months and years, and an interval as long as 17 years has been reported. The average period is about two years.

Choroidal carcinoma occurs bilaterally in about 25 per cent of the cases. Usually both eyes are not affected simultaneously, but one following the other. The author emphasizes the importance of differential diagnosis between carcinoma and malignant pigmented melanoma, a primary neoplasm of the choroid which will endanger the patient's life unless the eye is enucleated. This should be done as soon as possible after the diagnosis is made. In cases of metastatic carcinoma the prognosis is invariably grave, since this condition indicates generalized metastasis and the patient usually dies within a few months to two years after the ocular lesion is noted. The treatment is, therefore, palliative, and enucleation is performed only if pain and secondary glaucoma are present or appear imminent. If both eyes are involved, irradiation therapy should be resorted to in order to preserve some vision for the patient's remaining few months of life. This is especially important since many patients are unaware of the hopelessness of their general condition but are concerned about losing vision in the remaining eye.

The author reports a case of metastatic carcinoma of the choroid of the right eye from cancer of the breast, which appeared five years and three months after discovery of the primary tumor. Enucleation was performed because the tumor was growing rapidly and might have caused secondary glaucoma and pain, as well as extraocular metastasis. The patient was last seen by the surgeon two months after the operation, at which time no changes were noted in the left eye. Death occurred fifteen months after the enucleation was performed.

The author emphasizes that ophthalmoscopic examination should be made in carcinoma of any organ of the body, in an effort to uncover more cases of metastatic carcinoma of the choroid and thus improve the statistical data on the subject.

The Treatment of Interstitial Keratitis. D. P. North. *British Medical Journal*. No. 4878. p. 7. July 3, 1954.

Since the use of cortisone was begun 20 cases of interstitial keratitis associated with congenital syphilis have been treated at St. Mary's Hospital, London, and closely observed for one year. Some of these patients had had attacks of keratitis prior to the use of cortisone and already suffered visual impairment, while in several others keratitis was already well advanced before such treatment. Eight of the 20 cases had had no previous attacks or any visual impairment prior to the illness for which they were being treated. It is these eight cases which are reported.

Of the eight, three had had full syphilitic treatment for at least a year, including not less than 8,000,000 units of penicillin, before interstitial keratitis appeared. The other five started cortisone and anti-syphilitic treatment at the same time.

In every case the results obtained were excellent. What would formerly have been a long and painful illness with resultant blindness or defective vision was transformed by the use of cortisone into an acute condition lasting only a few days, and easily kept under control until the eyes were quiet and vision restored. The patients were hospitalized only during the acute stage, which seldom lasted more than a week. As soon as the condition could be controlled with local instillations they were treated as out-patients. Five of the eight cases later experienced recurrence of symptoms, but these were rapidly controlled by cortisone drops. There was no impairment of vision in any of the cases discussed; and the point is made that sight need not be impaired in any case of syphilitic interstitial keratitis if treatment with cortisone can be started before corneal infiltration obscures the vision.

Pathological Basis of Retrolental Fibroplasia. N. Ashton. *British Journal of Ophthalmology*. Vol. 38, p. 385. July 1954.

The conclusions drawn from a study of the microscopic pathology of four early cases agree with those of most workers that retrolental fibroplasia is a primary retinal disease of non-inflammatory origin, resulting from a derangement of retinal vascularization. The author disagrees, however, with the theory of a few that this disease can occur prenatally. He states that the development and course of the disease may be simply outlined in three pathological stages, and defines the first stage as the early extension into the vitreous of vaso-formative tissue which has erupted through the internal limiting membrane. Contending that many of the proliferative retinal changes described in the literature lose their significance when this strict criterion is adopted, he points out that none of the stillborn or short-lived premature infants considered in this study showed any Stage One pathological changes. Of equal significance was the fact that, out of his entire collection of 280 cases investigated clinically, histologically, or both, there was not a single example of

retrolental fibroplasia where oxygen had not been administered therapeutically.

It was noted that since the basic cause of the disorder is merely an abnormal overgrowth of the developing retinal vessels, it is not impossible that there might be a variety of precipitating causes; nevertheless, cases of retrolental fibroplasia of the type which has emerged as a clinical entity during the last 10 years occur in premature infants who develop the disease postnatally in circumstances related to the administration of oxygen. The author comments that there would be a solid basis for applying a special name to the oxygen-induced disease, but suggests that a revision of nomenclature should await clarification of the problems of pathogenesis.

Effect of Oxygen on Developing Retinal Vessels with Particular Reference to the Problem of Retrolental Fibroplasia. N. Ashton, B. Ward, and G. Serpell. *British Journal of Ophthalmology.* Vol. 38, p. 397. July 1954.

Assuming that retrolental fibroplasia begins simply as an overgrowth of normal vaso-formative tissue, the authors felt that such growth might occur in response to a stimulus identical in nature with the normal but excessive in degree. This variation appeared to be related to a disparity between oxygen supply and demand. On such a basis, however, it seemed impossible to reconcile other conflicting theories. In an attempt to clarify the etiological problem, therefore, it was decided to carry out an experimental investigation of the influence of varying concentrations of oxygen upon the developing retinal vasculature in the kitten, which is closely comparable to that in man. This investigation is described in detail, and the following results and conclusions reported:

High concentrations of oxygen at atmospheric pressure are able to induce in the growing retinal vessel of the kitten a type of vasoconstriction which progresses to complete obliteration of the vessels. This phenomenon has not been observed in extra-ocular vessels, and is apparently confined to the developing retina. It also occurs in the young rat and young rabbit, but to much less extent. The severity of vaso-obliteration is inversely proportional to the maturity of the vessels, and obliteration cannot be produced once the retinal vasculature is fully mature; it is directly related to the duration of exposure to oxygen, with about 36 hours required to obtain total obliteration in the most sensitive age groups of these animals; and it is directly related to the concentration of oxygen, concentrations below 35 per cent having little or no effect. On transfer to air the obliterated vessels only partially reopen, producing hemorrhages and a grossly abnormal vascular pattern. The vascular closure is rendered permanent by thrombosis or adherence of the opposing endothelial cells through plasma coagulation. This partially reopened network is inadequate to nourish the retina, and profuse vaso-proliferation develops.

When obliteration has been total the retina is revascularized from the disk and those vessels that reopened disappear; the new ingrowth, which is not arranged in the normal three complexes and consists of a dense circular mass of vessels, extends into the retina in a profuse and disordered manner, and glomerular tufts and

vascular loops grow into the vitreous. Eventually the whole retina is revascularized, arteries and veins differentiate, and the intravitreal vessels gradually disappear in a postero-anterior direction. Retinal detachment does not occur, and, apart from acute-angled folds in the retina, the normal histology is restored and vision is retained. The fundus picture, however, is grossly abnormal, there being an irregular vascular pattern and many more main vessels around the disk than normal.

Where obliteration has been partial, vaso-proliferation does not originate from the disk region only, but arises from the whole field of unobliterated or reopened vessels; in other respects the picture is similar. Where obliteration has affected only the periphery of the retinal vasculature vaso-proliferation and intravitreal growth is confined to this region, the posterior fundus being normal—a picture which exactly parallels that seen in most cases of Stage One retrolental fibroplasia. Vaso-proliferation did not occur in rabbits exposed to hyperoxia.

Several factors which might influence the above course of events were studied. In prolonged hyperoxia, it was found that obliterated vessels remain closed as long as the animal is kept in oxygen, providing no pulmonary complications ensue, and that if high concentrations of oxygen are maintained no vaso-proliferation occurs. No difference in the degree of vaso-proliferation was demonstrated on transferring animals to hypoxia rather than to air. Carbon dioxide in concentrations up to 5 per cent was found to have no effect on either the vaso-obliterative or vaso-proliferative phases. Priscol, in a single experiment, did not appear to modify the vaso-obliterative effect of oxygen. Tromexan profoundly modified the degree of vaso-obliteration seen after oxygen exposure—a fact which is probably not due to an antagonism to oxygen but to the prevention of intravascular coagulation, so that affected vessels are able to reopen in air. In studying the effect of re-oxygenation, it was found that, although a return to hyperoxia can to some extent control the vaso-proliferation stimulated by oxygen vaso-obliteration, the inevitable return to air is accompanied by an exacerbation of the process, and that this is attributable to the further period in oxygen.

Normal animals subjected to hypoxia showed a definite increase in retinal angioblastic activity, but intravitreal proliferations did not appear either in hypoxia or on transfer to air.

The probable mechanisms involved in the vaso-obliterative and vaso-proliferative phases are discussed, and reasons are given for supposing that vaso-obliteration cannot be explained solely in terms of the known vaso-constrictive or toxic action of oxygen. The limitation of this phenomenon to growing vessels may be attributable to the structural and functional relationships of the retinal and choroidal circulations which permit hyperoxygenation of the retina; thus the normal vaso-formative stimulus may be destroyed and the growing vessels may then collapse and atrophy; alternatively, a specific vaso-constricting metabolite with the power to obliterate immature vessels may be produced.

The features of the vaso-proliferative phase point to the production of a vaso-formative factor, elaborated in circumstances of tissue hypoxia or

anoxia, which is removed or utilized as the vessels grow into the tissue. It is probable that this stimulus is identical with the normal in kind but excessive in degree. This concept explains all the events which develop in the eye on transfer to air after oxygen exposure, and may be applied to the problem of vaso-proliferation in such conditions as diabetic retinopathy, central venous occlusion, and Eales's disease. The authors point out that this is nothing more than a working hypothesis, but feel that future research may profitably be directed towards the identification or exclusion of such vaso-obliterative or vaso-formative factors.

Relating these experimental results to retrolental fibroplasia, it is concluded that the findings exactly parallel the early stages of the human disease. The difference in the subsequent course is dependent upon the development of retinal detachment which did not occur in the kitten experiments. Despite this difference the two diseases appear identical in origin and this conclusion is supported by other experimental work and by considerable clinical evidence.

Considering the results in relation to treatment of retrolental fibroplasia, it is apparent that prophylaxis is by far the most hopeful line of attack and an urgent plea is made for the control of oxygen therapy in the treatment of the premature baby.

Direct Observation of the Effect of Oxygen on Developing Vessels. Preliminary Report. N. Ashton and C. Cook. *British Journal of Ophthalmology.* Vol. 38, July 1954.

In previous papers Ashton and others reported that high concentrations of oxygen are able to exert on growing retinal vessels a peculiar type of constrictor action which progresses gradually to complete obliteration of the ingrowing complexes. The present paper is a preliminary report of experiments designed to shed further light on the mechanism of this process.

A new limbal window technique is described and an account is given of direct observation of the effect of oxygen on the retinal vessels by this method.

It was found that oxygen has no observable effect on the retinal vessels of the adult cat. In the kitten, however, both immediate and delayed effects were seen. The immediate effect consists of vaso-constriction and capillary obliteration developing after 5 minutes' exposure to oxygen. This does not progress to total obliteration and the vessels reopen after about 10 minutes, remaining in this state for about 5½ hours, when the delayed reaction occurs. The vessels then constrict again and total vaso-obliteration gradually develops. In about 8 hours the obliteration is complete. Once this has been achieved the circulation may be either opened or closed, in about 5 minutes in each case, by alternating air and oxygen. Vaso-obliteration cannot be induced in the detached retina, and obliterated vessels reopen when detachment develops.

Ocular Histology in Premature Infants with Reference to Retrolental Fibroplasia. B. A. Ward. *British Journal of Ophthalmology.* Vol. 38, p. 445. August 1954.

In an effort to shed further light on the question of prenatal versus postnatal origin of retrolental fibroplasia, eyes obtained from 100 premature babies were examined in search of

early signs of this disease and of physiological or pathological conditions which might predispose to the disease. These eyes were examined with particular reference to the processes of retinal vascularization and coaption.

Thirteen per cent of the cases showed an unusually marked degree of angioblastic activity, indicated by increased quantities of vasoformative tissue in the nerve fibre layer. Apart from low birth weight this change was not associated with any characteristic of retrolental fibroplasia, and there was no evidence that it was beyond the upper limits of normality.

Apart from the incomplete retinal vasculature, which is one of the characteristics of prematurity, no evidence of a nucleus of RLF was found.

Polysaccharide Granules in Association with Developing Retinal Vessels and with Retrolental Fibroplasia. G. Serpell. *British Journal of Ophthalmology.* Vol. 38, p. 460. August 1954.

Examinations were made of eyes taken from infants with early retrolental fibroplasia, live-born premature infants, live-born mature full-term infants, stillborn premature infants, stillborn mature full-term infants, foetuses, rabbits, and kittens—the latter both normal and with new-vessel formation induced by treatment with oxygen.

It was found that polysaccharide granules, which occur in association with areas of increased mesenchymal cell content in the inner retinal layers in the early stage of retrolental fibroplasia, also occur in the developing retinal vessels of premature human eyes, human foetal eyes (where vascularization has commenced) and the eyes of new-born kittens and rabbits. The relationship of polysaccharide granules to the developing retinal vasculature depends essentially on their association with proliferating mesenchymal cells in the developing vascular bed. These granules have been identified histochemically as glycogen, but their metabolic significance in association with developing retinal vessels is not yet known.

Postnatal Cataracts in Premature Infants. Report of Two Cases. L. P. Guy. *American Journal of Ophthalmology.* Vol. 38, Part 1. p. 65. July 1954.

A full report is given of two cases of postnatal cataract in premature infants because the condition is clinically important, even though it is either very rare or not often recognized. Both infants developed the cataracts between the third and sixth month after birth, without any apparent etiology. One child had pyloric stenosis and was quite ill but the second child was always in good health. In neither case could any definite cause be ascertained.

The author mentions that these cases came to light as the by-product of a study made of 1,000 premature infants at Bellevue Hospital, aided by a grant from the National Society for the Prevention of Blindness, in an effort to learn more about retrolental fibroplasia. The latter disease has caused the eyes of infants, and particularly premature infants, to be studied earlier and more thoroughly in the past five or 10 years than formerly. It is therefore possible that cataracts similar to those reported may have occurred previously but have not been recognized as being postnatal in development.

BOOKS AND PAMPHLETS

Education and Health of the Partially Seeing Child. Winifred Hathaway. Third Edition. Columbia University Press, New York. 1954. 228 p. $3.75.

This well-known source book describes ways and means of providing educational facilities for partially seeing children and offers plans which enable them to participate as nearly as possible in normal school life.

The third edition includes new material relating to itinerant teacher programs, regular class placement, finding children with visual handicaps, education in rural areas, and classroom equipment.

Mrs. Hathaway was the associate director of the National Society for the Prevention of Blindness for 24 years. She was a pioneer in this field of education and was known throughout the country as a leading authority.

The text will be published in Great Britain, Canada, India and Pakistan by Geoffrey Cumberlege, Oxford University Press.

Neuro-Ophthalmology. Donald J. Lyle, M.D. Second Edition. Charles C. Thomas, Springfield, Illinois. 1954. 594 p. $17.50.

As evidence that neuro-ophthalmology has gained great impetus in the last few years the author points to the many current programs, discussions, papers and books on the subject. It is now generally recognized that the eye is a projection of the brain which has moved toward the surface in order to contact light and perceive images of the outer world; also that blood supply and drainage is by way of the cranial cavity. The eye is frequently influenced by, and reflects, the various affections of the central nervous system.

In the second edition of this text basic knowledge of the subject is amplified and there is detailed discussion of recent advances in investigation and clinical concepts.

Chapters deal with the visual and oculogyric systems; structures of the brain concerned with ocular reflexes; motor and sensory nerves of the eye and adnexa; arterial and venous vascular systems of brain and eye; also with pathologic processes, histo-pathologic studies, and detailed investigation of the dysfunction produced.

The text is enriched with over 3,200 bibliographic references and is profusely illustrated.

Text-Book of Ophthalmology. Vol. VI. Injuries. Sir Stewart Duke-Elder, KCVO, M.A., LL.D. C. V. Mosby Company, St. Louis. 1954. 1,226 p. $25.00.

The appearance of another volume in the series by this eminent author is an important event. In introducing the vast amount of subject matter, so clearly and skillfully presented, Sir Stewart observes that the effects of injuries to the eye are much more severe than those of injuries to any other part of the body. This is partly because of the delicacy of ocular tissue and partly because a trauma which elsewhere would cause little and temporary inconvenience can readily result in blindness.

"Ocular injuries therefore assume unusual social and economic importance," he states, "involving a huge cost in human unhappiness, economic

inefficiency and monetary loss. Even the aggregate sum of the trivial injuries which cause no permanent damage costs every industrialized community an amount in time and money which few would believe unless they had specifically looked into the matter." He cites a study by Minton in 1949 revealing that in the industrialized community of London 30 per cent of all acute eye cases attending hospital were due to injury.

Seven categories are suggested in classifying ocular injuries from the etiological point of view—intrauterine, birth, domestic, travel and sport, agricultural, industrial and war. These are discussed in general as an introduction to the two main sections of the volume. Part I deals with mechanical injuries—concussions, contusions, incised wounds, retained foreign bodies, gunshot and explosives injuries, and indirect effects; Part II with non-mechanical injuries—thermal, ultrasonic, electrical, radiational, chemical and stress.

The text is beautifully and profusely illustrated, and the typography, as in other volumes of the series, is of outstanding style and clarity.

The Optometrist's Handbook of Eye Diseases. Joseph I. Pascal, M.D., and Harold G. Noyes, M.D. C. V. Mosby Company, St. Louis. 1954. 300 p. $9.50.

The optometrist in the course of his professional work comes in contact with cases in which eye disease is suspected and which indicate the need for prompt medical or surgical service. The authors of this text state that the optometrist should not involve himself in the fine points of differential (pathological) diagnosis, etiology and treatment. They present these subjects only in enough detail to give an understanding of basic causes of diseases likely to be encountered, and to permit recognition of pathological deviations from the normal.

For many years both authors have been teaching diseases of the eye to optometrists and have incorporated in this text the results of their experiences in this field. In addition to the discussion of diseases affecting the eye and adnexa, there are chapters on heredity and genetics as they affect the eyes; refractive changes resulting from disease; headaches of ocular origin; eye injuries and first aid; and questions on ocular pathology.

The book is well illustrated and carefully indexed.

Practical Guidance Methods for Counselors, Teachers and Administrators. Robert H. Knapp. McGraw-Hill Book Company, Inc., New York. 1953. 320 p. $4.25.

Teachers, counselors, administrators and others who teach and guide children require ready sources of information on how to meet individual growth needs. The author of this text, who is dean of student personnel services at the University of South Dakota, expresses the hope that it will be of special help to the classroom teacher. He points out that while counselors and other professionally trained guidance workers in a school bear important responsibilities we must rely on the classroom teacher, at least for the time being, to perform guidance services for the large proportion of students.

A considerable section of a chapter on "The Guidance of Students with Special Physical Needs" is devoted to

the problems of the partially seeing. The author stresses the importance of having children with visual handicaps participate in regular classroom and other group activities in which close eye work is not involved.

Dental, Eye, and Personal Preventive Services Received by an Observed Population. Selwyn D. Collins, Ph.D., and F. Ruth Phillips. Public Health Service Publication No. 290. 1953. U. S. Government Printing Office, Washington 25, D. C. 25 p. 20 cents.

A special report by the Public Health Service, based on a sample of white families in the Eastern Health District of Baltimore canvassed at monthly intervals from 1938 to 1943, provides interesting data on the frequency of eye examinations.

Eye examinations were relatively infrequent, 34 per 1,000 population per year, as compared with 61 physical examinations and 158 dental examinations. However, 83 per cent of persons examined procured lenses as a result of these examinations. The average examination involved two visits. Of all persons examined, 3.1 per cent came for eye care in connection with some illness, 1.5 and 3.9 per cent for males and females, respectively.

The highest examination rates occurred at school age (10 to 14 years, with a rate of 52 per 1,000) and age 45 to 54 years, when presbyopia raised the rate to 49.

Rates for females were much higher than for males, both for examination (43 for females vs. 24 for males) and procurement of lenses (36 and 20, respectively).

Examination rates by occupation showed that housewives, with a rate of 45, had the highest rate. The rates for males were about the same (22) for all occupational groups.

Of all eye examinations 47 per cent were done by optometrists, 33 per cent in clinics, and 20 per cent by private physicians, of whom two-thirds were eye physicians.

Eye examination rates were generally higher among the low income groups, especially for the school age group, age 5 to 14 years, for which the rate was 66 per 1,000 per year.

Directory for Exceptional Children. Porter Sargent Publishers, Boston, Mass. 1954. 96 p. Paper $1.10; cloth $2.20.

This is announced as the first directory to provide detailed information for parents, teachers, social workers and others concerned with the health, education and welfare of exceptional children. It includes listings by states of schools, convalescent homes, clinics and other privately sponsored facilities; tutors, tutoring and remedial schools; private summer camps for the handicapped and maladjusted; public and private psychiatric and guidance clinics; state services and schools. Also listed are 60 national societies, associations and foundations, and 42 periodicals concerned with the problems of exceptional children.

"JOHNNY'S NEW WORLD" NEW NSPB FILM

"Johnny's New World," a new full-color film on care of children's eyes, produced by the National Society for the Prevention of Blindness, had its first showing in September at the Johnny Victor Theater in New York.

An audience of public health executives and prevention of blindness

workers viewed the film, which tells the dramatic story of the impact of poor vision on the life of a young boy. Designed for community groups, especially parents and teachers, the motion picture discusses common visual trouble in children, discovery and treatment of defects, and the structure of the human eye.

"Johnny's New World" tells what happened to a boy named Johnny when a curtain of blurred vision slowly descended over his eyes. School work became harder, reading was difficult, and even games became a chore. Thanks to an alert teacher and school nurse and the prompt action of Johnny's mother, however, he rediscovered the bright world of good eyesight with a new pair of glasses.

The motion picture, made possible by a grant from the New York Community Trust, was photographed on location at the Solebury Elementary School, part of the New Hope-Solebury school district of Philadelphia. Johnny James, eight-year-old star of the film, was selected from a group of New Hope youngsters by producer Leo Trachtenberg.

This is a 16-mm. film which runs for 16 minutes; the cost per print, $110. The film may be rented for $2.50 per showing plus mailing cost. For information, write to NSPB at 1790 Broadway, New York 19.

STATEMENT OF THE OWNERSHIP, management, and circulation required by the Act of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233).

Of THE SIGHT-SAVING REVIEW published quarterly at Philadelphia, Pa., for October 1, 1954.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, National Society for the Prevention of Blindness, Inc.,
1790 Broadway, New York 19, N. Y.

Editor { Franklin M. Foote, M.D., Editor-in-Chief.
Florence Nelson, Editor.

Managing editor, Florence Nelson.
Business manager, Same.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

FLORENCE NELSON,
Editor

Sworn to and subscribed before me this 29th day of September, 1954.

CLARE M. DALEY
Notary Public, State of New York

[SEAL]
(My commission expires March 30, 1956.)

Index to Volume XXIV: 1954

SIGHT-SAVING REVIEW

AUTHORS

Adler, Francis Heed. (Bk. Rev.). 1:63; 2:126.
American Parents Committee, Inc. (Bk. Rev.). 1:61.

Becker, Bernard. 2:86.
Braley, Alson E. 4:201.
Burney, L. E. 2:72.

Christner, Florence. 1:30.
Clark, E. Gurney. (Bk. Rev.). 3:190.
Collins, Selwyn D. (Bk. Rev.). 4:252.

Duke-Elder, Sir Stewart. (Bk. Rev.). 4:250.

Elwyn, Herman. (Bk. Rev.). 1:61.

Fink, Walter S. 4:196.

Gibson, Charles D. 1:11.
Goldstine, Dora. (Editor). (Bk. Rev.). 3:191.

Haessler, F. Herbert. (Bk. Rev.). 1:64.
Harrison, William J. (Bk. Rev.). 1:63.
Hathaway, Winifred. (Bk. Rev.). 4:250.
Highway Research Board. (Bk. Rev.). 1:62.
Hoenig, Leah. 4:217.
Holmes, William John. 3:145.

Ingram, C. (Bk. Rev.). 1:61.

Jenks, William F., Rev. (Editor). (Bk. Rev.). 1:62.

Kearney, Paul W. (Bk. Rev.). 1:62.
Kerby, C. Edith. 1:15.
Knapp, Robert H. (Bk. Rev.). 4:251.
Kornzweig, A. L. 3:130.
Kramer, Mary Everist. (Bk. Rev.). 3:191.

Leavell, Hugh R. (Bk. Rev.). 3:190.
Lindeman, Eduard A. 3:148.
Lossef, Samuel. 4:217.
Lyle, Donald J. (Bk. Rev.). 4:250.

Mattis, Robert Dean. 2:78.
Michaelson, I. C. (Bk. Rev.). 1:62.

NSPB Committee on Education of Partially Seeing Children. 2:94.
Noyes, Harold G. (Bk. Rev.). 4:251.

Palmer, Myra. 4:217.
Parkinson, Roy H. (Bk. Rev.). 1:64.
Pascal, Joseph I. (Bk. Rev.). 4:251.
Perera, Charles A. (Bk. Rev.). 1:63.
Pettit, W. A. 1:6.
Phillips, F. Ruth. (Bk. Rev.). 4:252.

Rich, Herbert. 4:217.
Rychener, Ralph O. 3:150.

Schachat, Walter S. 4:217.
Sherman, Allan W. 3:139.
Sorsby, Arnold. (Bk. Rev.). 2:128.
Steele, Margaret L. 3:154.
Stillerman, Manuel L. 4:204.
Swanson, Marie. (Bk. Rev.). 2:127.

Tudyman, Al. 4:226.

U. S. Public Health Service. (Bk. Rev.). 2:127.

Wallace, Helen M. 4:217.
Weinstein, Paul. (Bk. Rev.). 2:127.
Wilson, Charles C. (Editor). (Bk. Rev.). 2:126.
Wolpaw, Benjamin J. 3:139.

Yelton, Fred G. 2:89.

Zuckerman, Joshua. (Bk. Rev.). 3:190.

SUBJECTS

CAUSES OF BLINDNESS

Blindness in Preschool Children. (Statistical Study). C. Edith Kerby. 1:15.

Child Blindness in Brittany. (France). Around the World. 1:42.

DRUGS

ACTH and Cortisone. (England). Around the World. 3:172.

Current Concepts and Recurrent Misconceptions of the Treatment of Senile Cataract. Robert Dean Mattis. 2:78.

Heparin for Ocular Diseases. (Finland). Around the World. 2:105.

Recent Work on Aqueous Outflow. Bernard Becker. 2:86.

EDUCATION OF THE PARTIALLY SEEING

(A) Partially Seeing Child Learns to Read. Florence Christner. 1:30.

Progress in Education of the Partially Seeing in Oakland. Al Tudyman. 4:226.

Report of a Workshop on Meeting the Needs of Partially Seeing Children in Rural Areas. 3:158.

Research Needs Related to Partially Seeing Children. National Society for the Prevention of Blindness; Report of Committee on Education of Partially Seeing Children. 2:94.

(A) Study of New York's Partially Seeing Children. Helen M. Wallace, Walter S. Schachat, Myra Palmer, Leah Hoenig, Samuel Lossef and Herbert Rich. 4:217.

EYE DISEASES AND DEFECTS

Attack on Blinding Disease. (Onchocerciasis—World Health Organization). Around the World. 1:44.

"River Blindness" Control. (Onchocerciasis—Gold Coast.) Around the World. 4:233.

Cataract

Current Concepts and Recurrent Misconceptions of the Treatment of Senile Cataract. Robert Dean Mattis. 2:78.

Physiological Effects of Age on the Visual Process. A. L. Kornzweig. 3:130.

Sight Restoration Under the California State Program. W. A. Pettit. 1:6.

Conjunctivitis

New Type of Virus Conjunctivitis Described. 4:216.

Detached Retina and Vitamin A. (France). Around the World. 1:42.

Eye Disease among Arab Refugees. (Trans-Jordan). Around the World. 3:173.

Fly Control. (Egypt). Around the World. 1:41.

Glaucoma

(The) Cleveland Glaucoma Survey. Benjamin J. Wolpaw and Allan W. Sherman. 3:139.

Highlights of the 17th International Congress of Ophthalmology. Report. 4:206.

Physiological Effects of Age on the Visual Process. A. L. Kornzweig. 3:130.

Recent Work on Aqueous Outflow. Bernard Becker. 2:86.

Report on Infantile Glaucoma at AAOO. 4:213.

International Congress on Prevention of Blindness. Report. 4:215.

Land of Ocular Diseases. (India). Around the World. 2:106.

Ocular Defects in Preschool Children. Walter H. Fink. 4:196.

Ophthalmic Aspects of Reading Disabilities. Ralph O. Rychener. 3:150.

Ophthalmologic Frontiers in India. William John Holmes. 3:145.

Psychosomatic Ailments. (Philippine Islands). Around the World. 2:107.

Strabismus

Electroencephalographic Changes in Children with Strabismus. Manuel L. Stillerman. 4:204.

Ocular Defects in Preschool Children. Walter H. Fink. 4:196.

Retrolental Fibroplasia

Blindness in Preschool Children. C. Edith Kerby. 1:15.

Direct Observation of the Effect of Oxygen on Developing Vessels. Preliminary Report. N. Ashton and C. Cook. (Abstract). 4:248.

Effect of Oxygen on Developing Retinal Vessels with Particular Reference to the Problem of Retrolental Fibroplasia. N. Ashton, B. Ward, and G. Serpell. (Abstract). 4:246.

Observations on the Etiology of Retrolental Fibroplasia. H. H. Gordon, L. Lubchenco, and I. Hix. (Abstract). 2:121.

Ocular Histology in Premature Infants with Reference to Retrolental Fibroplasia. B. A. Ward. (Abstract). 4:248.

Oxygenation and Retrolental Fibroplasia. T. H. Ingalls and N. Purshottam. (Abstract). 3:189.

Oxygen Studies in Retrolental Fibroplasia. II. The Production of the Microscopic Changes of Retrolental Fibroplasia in Experimental Animals. A. Patz, A. Eastham, D. H. Higginbotham and T. Kleh. (Abstract). 2:113.

Pathological Basis of Retrolental Fibroplasia. N. Ashton. (Abstract). 4:245.

Polysaccharide Granules in Association with Developing Retinal Vessels and with Retrolental Fibroplasia. G. Serpell. (Abstract). 4:249.

Report on Retrolental Fibroplasia at AAOO. 4:212.

Retinopathy of Prematurity (Retrolental Fibroplasia) and its Relationship to Oxygen. R. Bedrossian. (Abstract). 2:113.

Retrolental Fibroplasia and Oxygen Therapy. J. T. Lanman, L. P. Guy and J. Dancis. (Abstract). 2:108.

Retrolental Fibroplasia and Prematurity. Medical Forum. J. M. Dixon, W. E. Laupus, E. Wolff and F. C. Blodi. (Abstract). 2:110.

Retrolental Fibroplasia and Related Ocular Diseases. Classification, Etiology, and Prophylaxis. T. S. Szewczyk. (Abstract). 2:116.

Retrolental Fibroplasia. Definitive Role of Oxygen Administration in Its Etiology. J. C. Locke. (Abstract). 2:122.

Role of Oxygen in the Genesis of Retrolental Fibroplasia. A Preliminary Report. N. Ashton, B. Ward and G. Serpell. (Abstract). 2:111.

Trachoma

Land of Ocular Diseases. (India). Around the World. 2:106.

Trachoma Battle. (Spain). Around the World. 1:44.

Uveitis

17th International Congress of Ophthalmology. Report. 4:206.

EYE INJURIES

Effects of Nuclear Radiation. 17th International Congress of Ophthalmology. 4:206.

How Delco-Remy Built a Vision Program. Fred G. Yelton. 2:89.

(The) Nurse and the Vision Program in Industry. Margaret L. Steele. 3:154.

Ocular Casualties. (Korea). Around the World. 1:43.

ILLUMINATION

Recommended Approach to School Lighting Design. Charles D. Gibson. 1:11.

INDUSTRIAL

How Delco-Remy Built a Vision Program. Fred G. Yelton. 2:89.

(The) Nurse and the Vision Program in Industry. Margaret L. Steele. 3:154.

MISCELLANEOUS

Around the World. 1:41; 2:105; 3:171; 4:232.

Books and Pamphlets. 1:61; 2:126; 3:190; 4:250.

Current Articles. (Abstracts). 1:45; 2:108; 3:175; 4:236.

Deaths

Chace, Robert R. 4:214.
Elliman, Lawrence B., Jr. 2:104.
Fortson, John L. 2:104.
Hardy, LeGrand H. 2:104.
Hathaway, Winifred. 4:194.
Kirby, Daniel B. 1:29.

National Society for the Prevention of Blindness—Annual Conference, 1954. Report. 2:66.

NSPB at Work. 3:164.

Notes and Comment. 1:38; 2:102; 3:174.

PROFESSIONAL RELATIONSHIPS

(The) Interprofessional Committee from the Viewpoint of an Ophthalmologist. Alson E. Braley. 4:201.

SIGHT RESTORATION

Eighth Year of The Eye-Bank for Sight Restoration, Inc. 1:2.

Sight Restoration Under the California State Program. W. A. Pettit. 1:6.

STATE PROGRAMS

(The) Citizen's Share in Public Health Programs. L. E. Burney. 2:72.

Report of a Workshop on Meeting the Needs of Partially Seeing Children in Rural Areas. 3:158.

Sight Restoration Under the California State Program. W. A. Pettit. 1:6.

VOLUNTARY AGENCIES

(The) Citizen's Share in Public Health Programs. L. E. Burney. 2:72.